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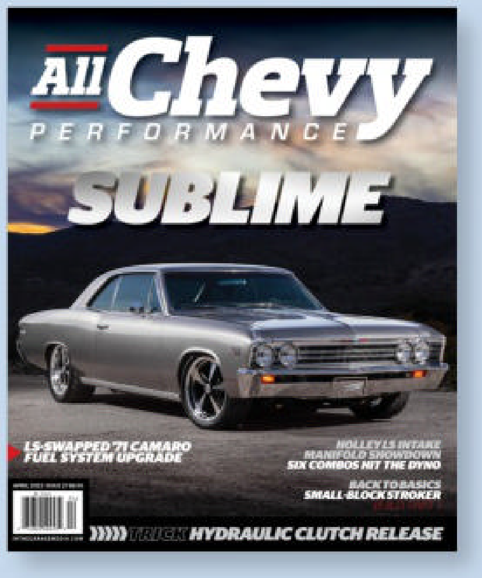
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TRICK HYDRAULIC CLUTCH RELEASE

ON THE COVER

Bo Juniel's '67 Chevelle easily passes the eye test while surpassing the cool factor by incorporating a 682hp, 510ci mill under the hood. Check out the full feature and story starting on page 18.

Photos by Wes Allison

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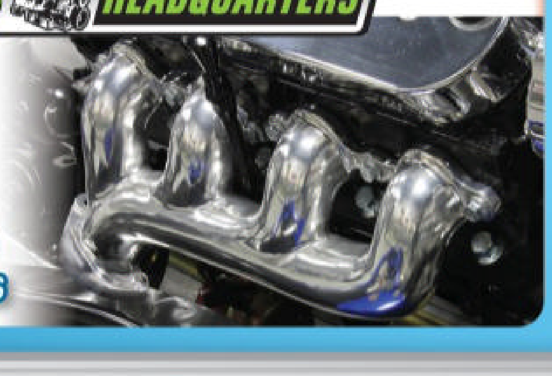

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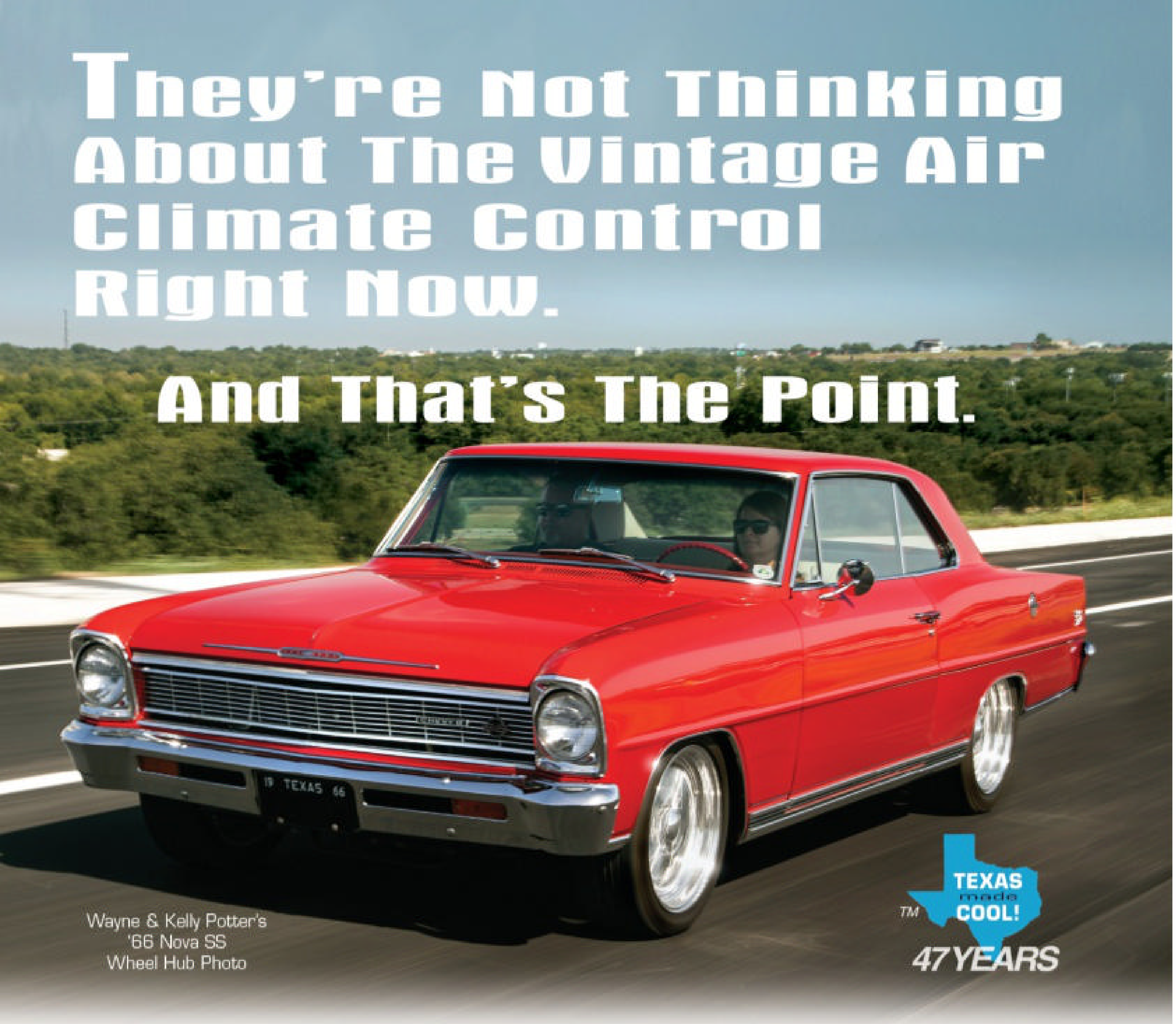
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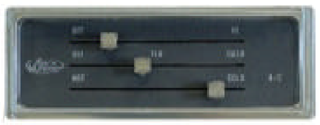

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BY **NICK LICATA**

STREET TAKEOVERS—NOT WORTH THE RISK

I'm sure you've all seen them—videos of street takeovers where inexperienced drivers do their best drifting imitation in what are normally busy intersections in big cities all across America. All this leads me to ask the question: What the hell are these kids thinking?

I'm not only talking about the ones in the car driving as much as I am the ones doing whatever it takes to boost their TikTok/Instagram numbers by getting as close to the action as possible to get "the shot."

I'll address the ones hanging most of their limbs out of the car windows or open doors in a minute. But I want to go back to the kids risking serious injury and putting their lives at risk by getting as close to the action as possible by trusting someone who has little or no experience spinning out-of-control donuts. Seriously? Is putting yourself in harm's way and trusting someone you have no business trusting worth boosting your social media? It can't possibly be.

Listen up. Hanging your body out of the window of a drifting car while your "trusty" pilot attempts to show his or her rubber-burning "skills" so you can become IG famous puts you at a greater risk of taking a trip to the hospital or possibly someplace worse–all for social media "stardom." I've seen videos of kids falling out of cars and getting slammed on the pavement when the vehicle they are sitting on goes out of control and hits a curb or another car; it's not pretty.

Be smart, y'all. We want the next generation of auto enthusiasts (that would be you) to be around to fly the hot rod flag in the future. Street takeovers only dilute the whole process as many folks not knowing the difference tend to lump hot rodders in the same category as the intersection-clogging blockheads. They are far from the same.

Next time you are considering attending an intersection smoke-fest, think about your parents and what they think you are out doing instead of what you're actually doing. You've earned their trust, and in turn they allow you the freedom to go out with your friends in hopes you are making good choices. If that choice is to risk your life by getting tossed out of a moving vehicle, or to play chicken with a 3,300-pound car, just know that your 160-pound frame has no chance of winning that game. Gross tonnage always wins. That's a fact!

So, next time you are inclined to get closer to that sliding missile of metal than anyone else, there is a good possibility you'll be more famous than you anticipated, only it won't be the video you shot, instead it could be one you'll be starring in on the 6 o'clock news shown to deter other kids from making a similar mistake.

We all like to have fun with our rides and the thrill of smoking the tires in a big-horsepower car is part of the lure, only it should always be done in a controlled environment—not on the streets putting the lives of innocent people at risk. ACP

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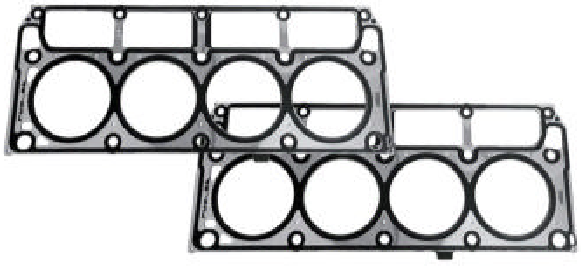

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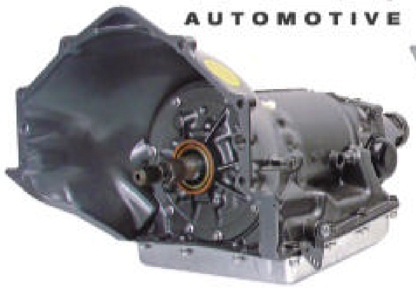

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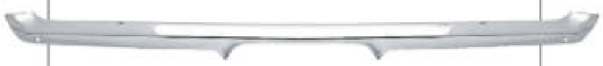

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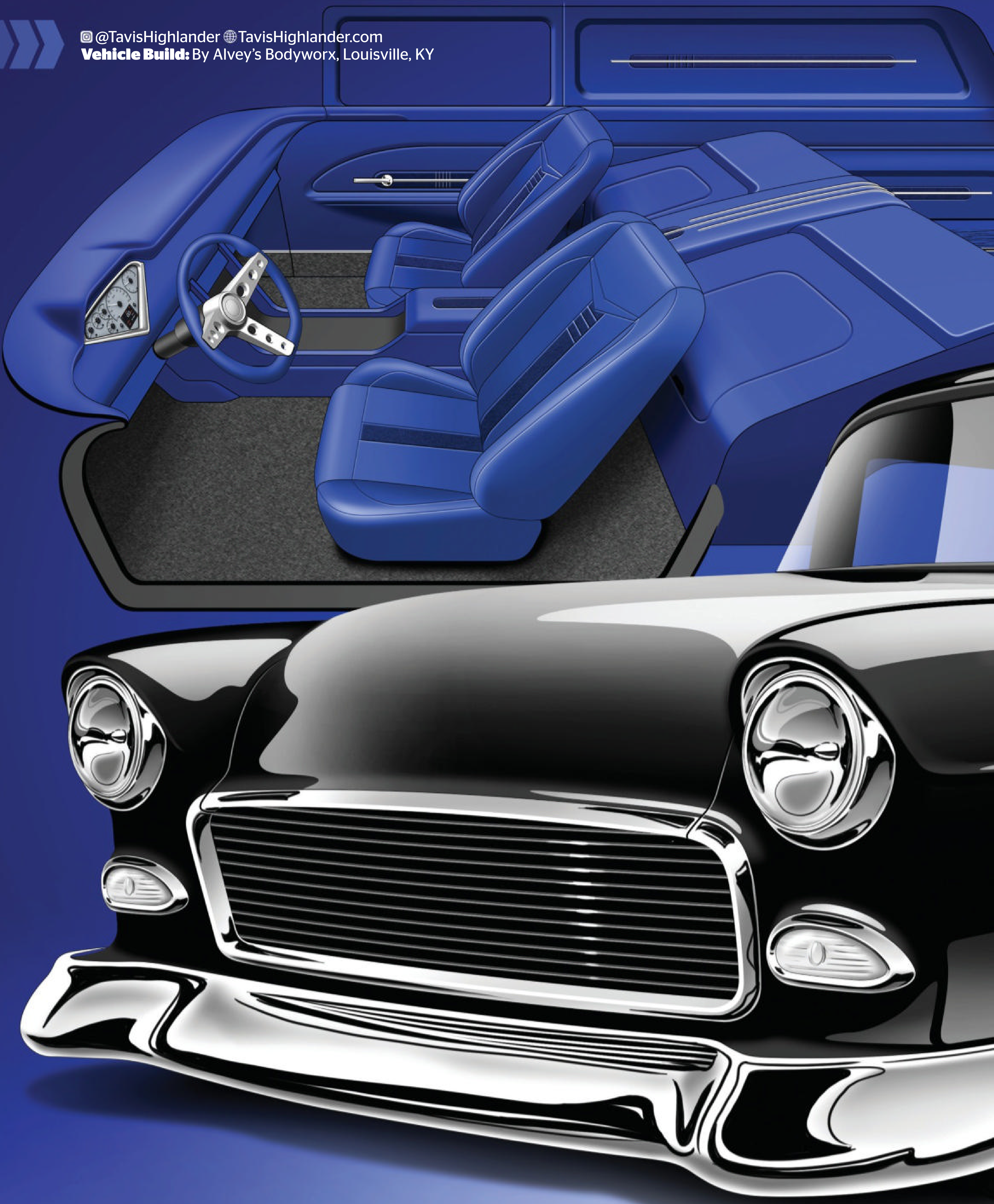
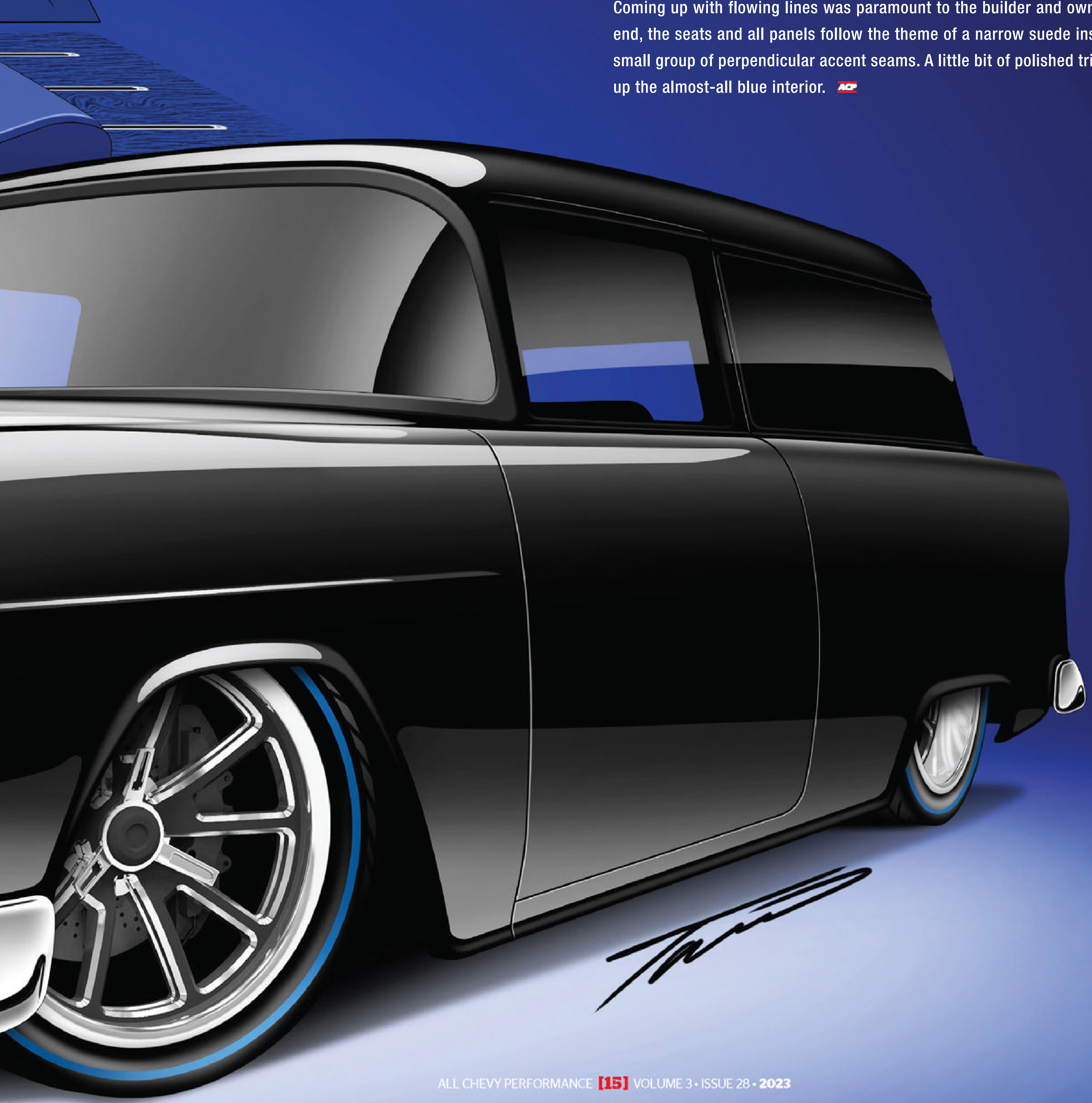


’55 CHEVY SEDAN DELIVERY

TEXT & RENDERING BY **TAVIS HIGHLANDER**

Thanks to air suspension, this custom ’55 sedan delivery is going to sit really low. The wheels tucking up into the fenders are Schott Venoms with tri-bar knockoffs. A cleaned-up body with tight tucked bumpers will show off the gloss black paint. Blue line tires finish off the look and tie into the dominant interior color.

The interior is where I spent much of my time as a designer on this project. Coming up with flowing lines was paramount to the builder and owner. In the end, the seats and all panels follow the theme of a narrow suede inset with a small group of perpendicular accent seams. A little bit of polished trim breaks up the almost-all blue interior.



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* Source: Proprietary Consumer Study of Automotive Aftermarket Parts Conducted by The NPD Group, 2019

CHEVELLE Dreams

BY **CAM BENTY** ✕ PHOTOGRAPHY BY **WES ALLISON**

ONE MAN'S PASSION TURNS INTO HIS DRIVE TO BUILD THE ULTIMATE '67 CHEVELLE

It can start in an instant and last a lifetime. You're driving with your folks or riding in a school bus and a cool car rumbles by. Stopped at a red light, you press you nose against the glass for a few fleeting moments of visual and audible contact only to see that cool shape slide away, probably never to be seen again. Regardless, you are never the same.

For Bo Juniel that irreversible change came courtesy of a '66 Chevelle that was parked near his home in the Antelope Valley, north of Los Angeles. The classic GM A-body shape was to cut an indelible pattern into his memory, building up like the layers of dust that would grow to envelop the cool Chevy over the years.

Bo would walk by the Chevelle every chance he had on his way home from school. Walking would evolve to biking and finally to drive-by encounters as he grew to appreciate just how significant that muscle car would become. He longed for that day when the current Chevelle's owner would greet him with the keys to the car and make his dream of ownership come true.

Unfortunately, one day the car was gone–only the shape of dirty tire tracks and dust markings sketching the Chevelle's perimeter remained. A knock on the door resulted in the owner informing Bo that the car had been sold as he had forgotten about Bo's years of chasing it. Bo went so far as to reach out to the new owner, offering a fair price, but he would not sell, further bursting Bo's bubble. He then criticized his perfect car as a "rust bucket" and that he was "better without it."

At that moment, Bo's big plans for one day owning the ultimate ride had been destroyed. It was like finding a cool, original big-block Chevelle being powered by an "upgraded" Tesla electric drivetrain—it just wasn't right.

With the original '66 Chevelle out of the picture, Bo was undeterred and began looking for another muscle car. Over the years he had done a lot of research and started to like the sister vehicle of the '66; the slightly more angular '67 Chevelle body style. After a long search he found a solid example on which to build his original vision of a muscle car.

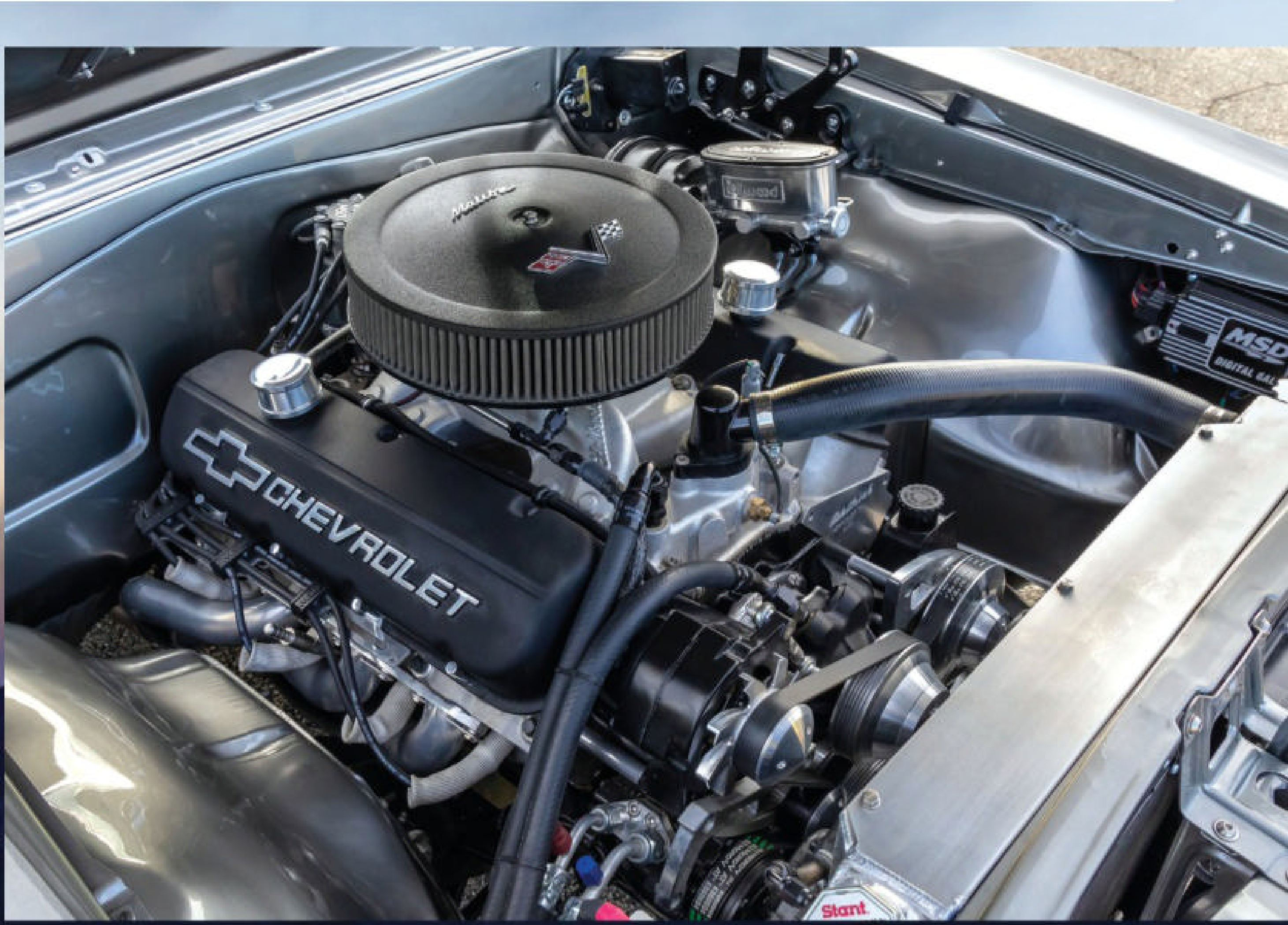
Right off the bat, the '67 Chevelle had two solid traits: no rust and it ran under its own power, both aspects can be hard to find in a 40-year-old muscle car. Equipped with a small-block engine and automatic transmission, it was a car that he could drive, all the while formulating a plan for the future. One thing that was clear: it was not going to stay in its current sedate configuration.

A longtime friend from Mission Hills, California, Bob Jennings, ran a well-known dyno shop not far from Bo's home. After four decades in the business, Jennings was well experienced in building and tuning classic muscle cars. But it only took a few brainstorming sessions between Jennings and Bo over what to do with the "plain Jane" Chevelle. Jennings recommended Jim Shewbert as the perfect guy to build an engine worthy of his childhood visions.

Shewbert had been in the performance engine building business for just about as long as Jennings, including stints with Milodon and building racing engines for some the most successful racers from the '60s-00s. Shewbert was able to "rip the Band-Aid off" Bo's budget and started in on the engine build. In the end, Shewbert created a very potent 510ci Gen VI big-block that was ultimately connected to a built Turbo 400 transmission, Gear Vendors overdrive, and GM 12-bolt rearend with C-clip eliminators and 3.73:1 ratio gearing.

Today the Chevelle resides in Antelope Valley, the same place that served as its home since Bo purchased the car 20 years ago. Bo ultimately retired from the Los Angeles District Water and Power a few years ago and left the continental United States, taking up residence in Kauai, another of his dreams from his youth. Currently, he bounces between Kauai and the Antelope Valley every month or so. Each visit to the mainland includes a mandatory drive in the high-powered Chevelle.

SUMMIT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So, the obvious question of "why not move the car to Kauai so he can drive it every day?" arises. The answer? "That's because the speed limits in Kauai are about 50 mph. No place for a high-performance car," Bob notes.

Rest assured this Chevelle won't be outside gathering dust and rust like the one that set the hook for Bo's passion back in the day. Nope, today this Chevelle will do all its casting of childhood passions at car shows and while cruising the streets of Southern California. It's a service all future car enthusiasts are sure to appreciate. ACP

TECH ✓

OWNER: Bo Juniel, Kauai, Hawaii
VEHICLE: ’67 Chevrolet Chevelle

Engine

TYPE: GM Gen VI Marine block
DISPLACEMENT: 510 ci
COMPRESSION RATIO: 10.5:1
BORE: 4.500 inches
STROKE: 4.00 inches
CYLINDER HEADS: Aluminum Edelbrock RPM Heads
ROTATING ASSEMBLY: GM 502 forged crankshaft, Arias pistons, Eagle 6.385-inch H-beam rods
CAMSHAFT: Comp Cams Hydraulic Roller (294/300 degrees duration at 0.600 inch, 0.540-inch lift intake, 0.560-inch lift exhaust)
INDUCTION: Edelbrock Air Gap Intake, Pro Form 850-cfm carburetor
IGNITION: MSD 6AL ignition box and Blaster Coil with MSD 8.8mm wires and NGK spark plugs
ASSEMBLY: Marine block, engine built by Jim Shewbert
EXHAUST: 3-inch exhaust tubing through 40-series Flowmaster mufflers
ANCILLARIES: March dual-serpentine pulley set, dual 14-inch SPAL fans, CBR custom-built radiator, Milodon oil pan, Millings high-volume oil pump, MSD Pro Billet distributor, Cosmetic 0.041-inch head gaskets, Manley 3/8x0.135-inch wall pushrods
TUNING: Jim Shewbert
OUTPUT: 682 hp, 650 lb-ft

Drivetrain

TRANSMISSION: GM Turbo 400 transmission modified by Mike’s Transmission, reverse valvebody, Monster Transmission & Performance anti-balloon plate torque converter, B&M shifter, Gear Vendors overdrive, custom-built driveshaft
REAR AXLE: 12-bolt rearend with C-clip eliminators, 3.73:1 gears, 31-spline axles

Chassis

FRONT SUSPENSION: UMI Stage 5 Pro Touring suspension kit
REAR SUSPENSION: UMI Stage 5 Pro Touring suspension kit
BRAKES: Wilwood 13-inch rotors, drilled and slotted, six-piston front and four-piston rear, CVR electric vacuum pump

Wheels & Tires

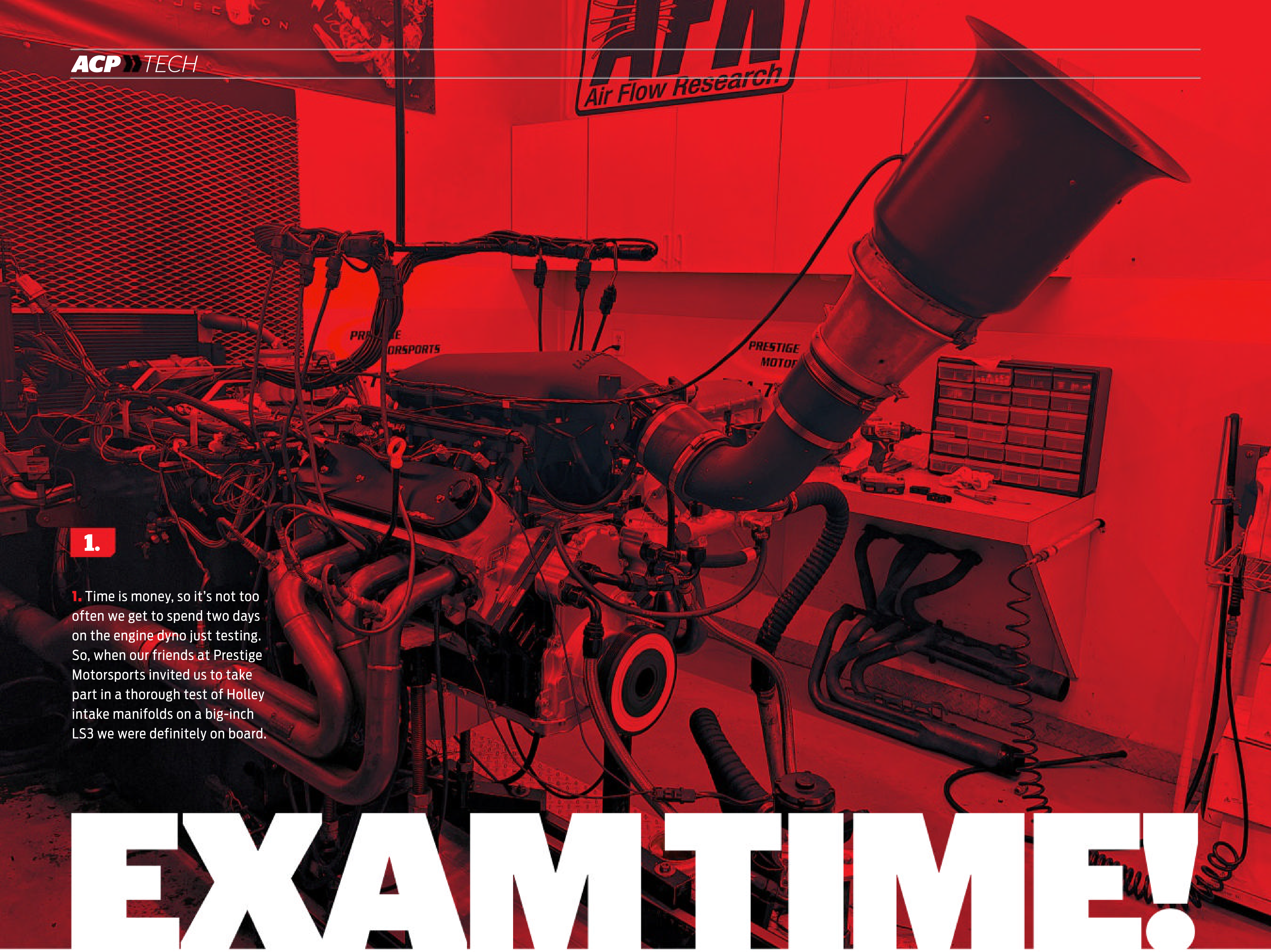
WHEELS: U.S. Mags U109 Bandit, 18x8 front, 18x9 rear
TIRES: Toyo Proxies R888, 235/40R18 front, 275/40R18 rear

Interior

UPHOLSTERY: Mercedes-Benz German Velour black carpet, custom-built two-tone leather door panels
SEATS: ’13 Infiniti G37 seats with two-tone leather upholstery, black and gray with black suede headliner
AUDIO SYSTEM: Alpine ILS207 SXM, Vibrasonic reverb, 13 Focal speakers, two Focal amps, KnuKonceptz power cables
STEERING: Ididit tilt column
SHIFTER: B&M reverse valvebody shifter
DASH: Marshall Instruments, ’60s Muscle Car set (6), additional gauges, Classic Instruments (2)
HVAC: Vintage Air
POWER WINDOWS: New Relic

Exterior

BODYWORK AND PAINT: A&J Auto Body (Lancaster, CA), final assembly by ASEN Auto (Santa Fe Springs, CA)
PAINT: Lexus Atomic Silver variant
HOOD: Factory '67 Chevelle SS, Billet Specialties hood hinges
TRIM: New window glass, taillight lenses and bezels, LED side mirrors, re-chromed bumpers and N.O.S. door handles, hardware, and trim



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1. Time is money, so it's not too often we get to spend two days on the engine dyno just testing. So, when our friends at Prestige Motorsports invited us to take part in a thorough test of Holley intake manifolds on a big-inch LS3 we were definitely on board.

EXAM TIME!

BY **JEFF HUNEYCUTT** PHOTOGRAPHY BY **THE AUTHOR**

The great things about the LS engine are the aftermarket has fully embraced it as a performance engine and there are tons of options for your next build.

The bad things about the LS engine are the aftermarket has fully embraced it as a performance engine and it can be frustratingly difficult to separate the wheat from the chaff when it comes to determining the best components for your next build.

Don't worry. We're here for you.

We recently spent two days in the dyno cell with the engine builders at Prestige Motorsports testing just LS intake manifolds from Holley. Our entire purpose was to find out how Holley's different intake manifold options affect how (and where) the engine makes power. And boy, the results were enlightening.

We've done stories with the mad scientists at Prestige Motorsports before because, unlike many engine builders, they are always testing new combos. This is actually pretty rare because dyno time costs money—not only in terms of wear and tear on your equipment, but every hour spent testing is an hour spent not building engines for customers that you can sell. But Prestige feels that continuous testing is vital for keeping ahead of the competition, and they always welcome us to tag along.

Prestige has a strong relationship with Holley and uses many of their products whenever possible. So, Prestige has a lot of familiarity with the Holley lineup of intakes for the LS engine, but this is the first time we've seen such a wide variety of intakes run one after another on the same engine.

The engine that we're using for a test mule is a big-inch 427 with LS3-style cylinder heads. The bore is 4.125 inches with a 4.000-inch stroke. The heads are Prestige's own LS3 castings with an 11-degree valve angle, 255cc intake ports, and 69cc combustion chambers. The compression ratio is a healthy 11.3:1.

WE TEST MULTIPLE HOLLEY LS INTAKE MANIFOLDS ON THE DYNO TO FIND OUT WHAT WORKS BEST FOR YOUR APPLICATION

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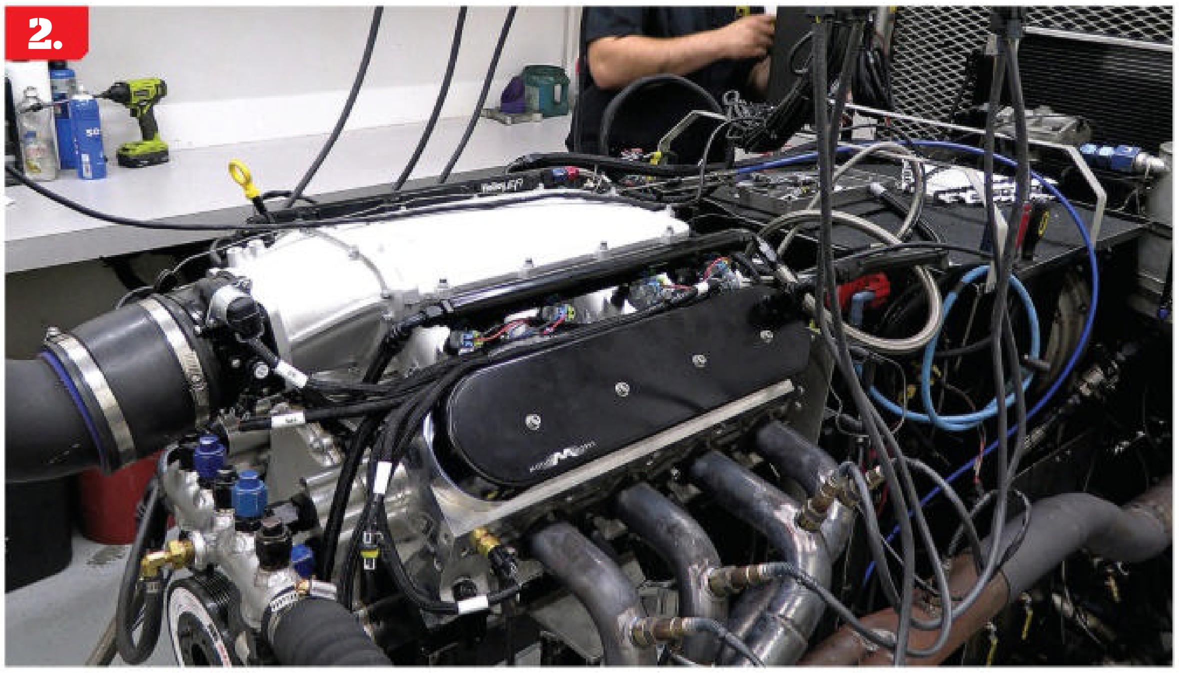

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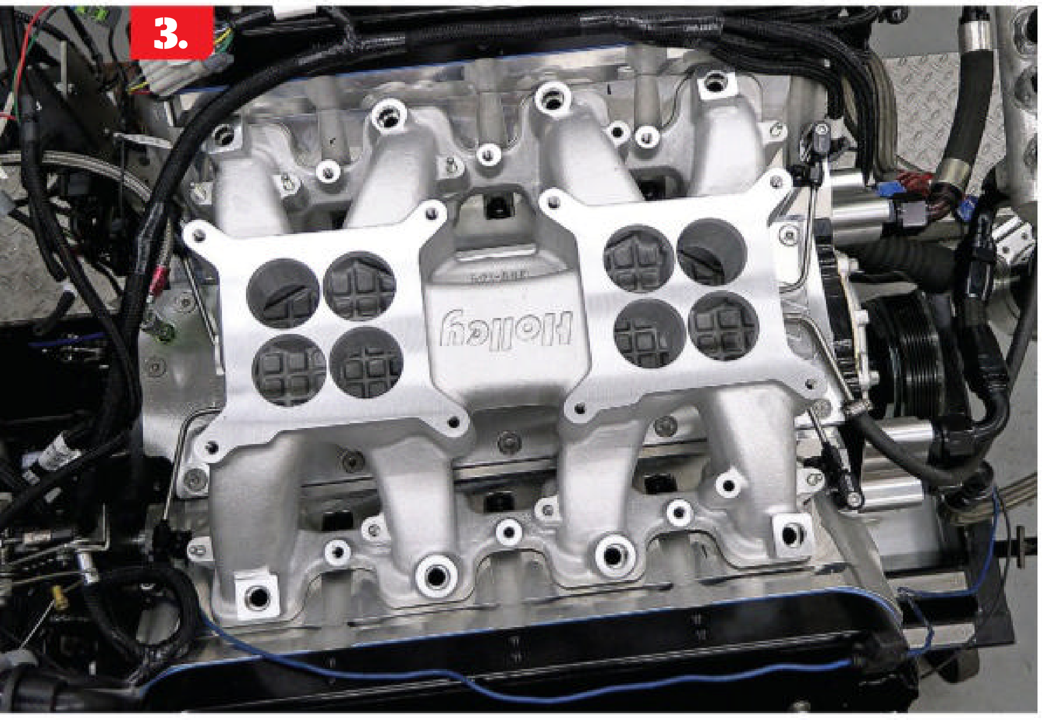

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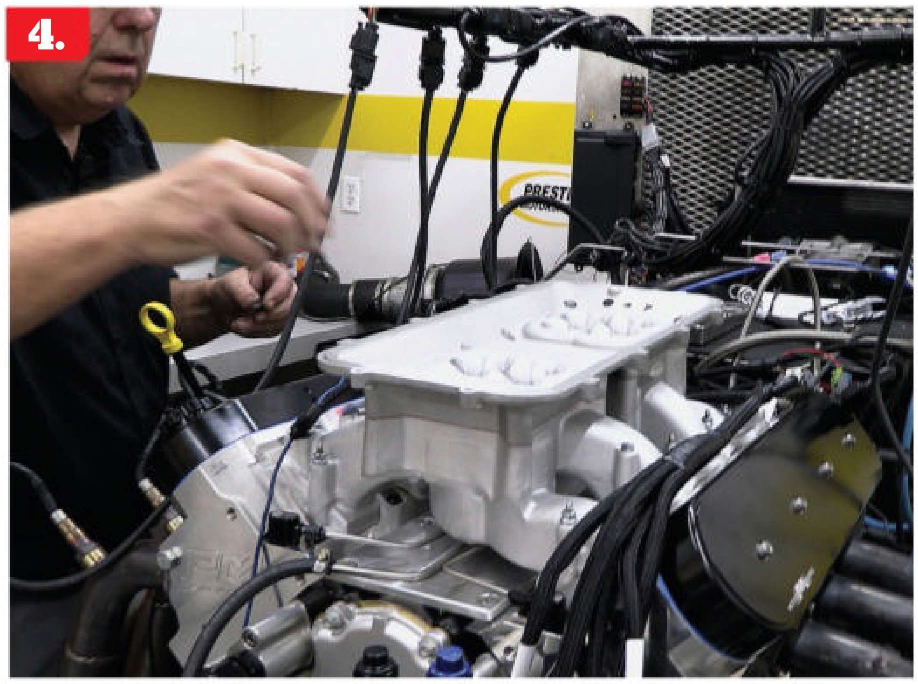

2. With a height of just 6.86 inches, Holley's Ultra Lo-Ram is exactly that. We thought the short runner length would help high-rpm power but worried the reduced plenum volume from the flat top would hurt overall power production. But this intake surprised us with its strong performance on the dyno.

3. The lower section of the Holley Mid-Rise intake resembles an old-school dual-plane intake set up to accept two four-barrel carbs. A plenum connects to two sections, and the runner lengths are unequal and pretty long.

4. A mid-section creates a common plenum that feeds the runners. From this angle you can also see how the runners feed the cylinder heads from different heights and angles.

The cam is a hydraulic roller from Comp Cams. It is ground with 243 degrees of duration for the intakes at 0.050-inch lift and 248 for the exhausts. Net valve lift is approximately 0.650 inch. The exhaust headers are a set of four-into-ones with $1^7/_8$-inch primaries expanding to 2-inch secondaries.

For all the pulls we'll be using a 102mm throttle body. Also, because even fuel injectors that have the same flow rating can vary slightly, we're not only swapping out the same set of injectors for every intake, we're making sure they go into the same holes each time. All the engine controls are handled by a Holley Dominator ECU.

Finally, one last note before we get to the fun stuff. The goal of the testing is to determine which intake manifold designs will work best for different scenarios. There are no losers here. Of course, this isn't the same as a preschool soccer game where no one keeps score and all the kids are declared winners while they eat their after-game orange slices. The losers—otherwise known as the off-shore, no-name knockoffs with poor casting quality and wild machining tolerances–have already been weeded out. What we're testing here are four different intakes in a few different configurations that we know are quality to see how they influence power production in the rpm band.

Holley Ultra Lo-Ram

It is obvious that the Ultra Lo-Ram is designed for applications where you have a really low hood line and don't want to cut a hole into or otherwise modify your hood. And the Ultra Lo-Ram is so short the plenum top doesn't even extend above the fuel rails. Holley says that this will fit the C6 Corvette without any changes to the stock hood, so if it can make power over stock that's a good deal.

Besides the ridiculously low 6.86-inch front height, thanks to the flat plenum top, we also wondered if the short runners would help this be a decent option for high-rpm applications. Remember, short runners typically help move the peak power higher in the engine's rpm range, while longer runners help develop torque and power right off the hit.

On the dyno, we documented runs for every intake from 4,000 to 6,900 rpm. The Ultra Lo-Ram, as you might expect, did make good power higher in the upper-rpm range. Torque peaked at 543.8 lb-ft at 5,700 rpm and 639.6 hp at 6,700. Meanwhile, the averages across the range were 515.0 and 535.6.

When it comes to horsepower, both the peak and average numbers actually turned out to be quite good. They were the best we found until we got to the Hi-Ram intakes, which are more for all-out competition than street use. The torque also wasn't far off the other intake manifolds, although it did lag through most of the pull. Still, if you are building a sleeper and want to keep everything nice and out of sight behind a stock hood, the Ultra Lo-Ram is probably exactly what you are looking for.

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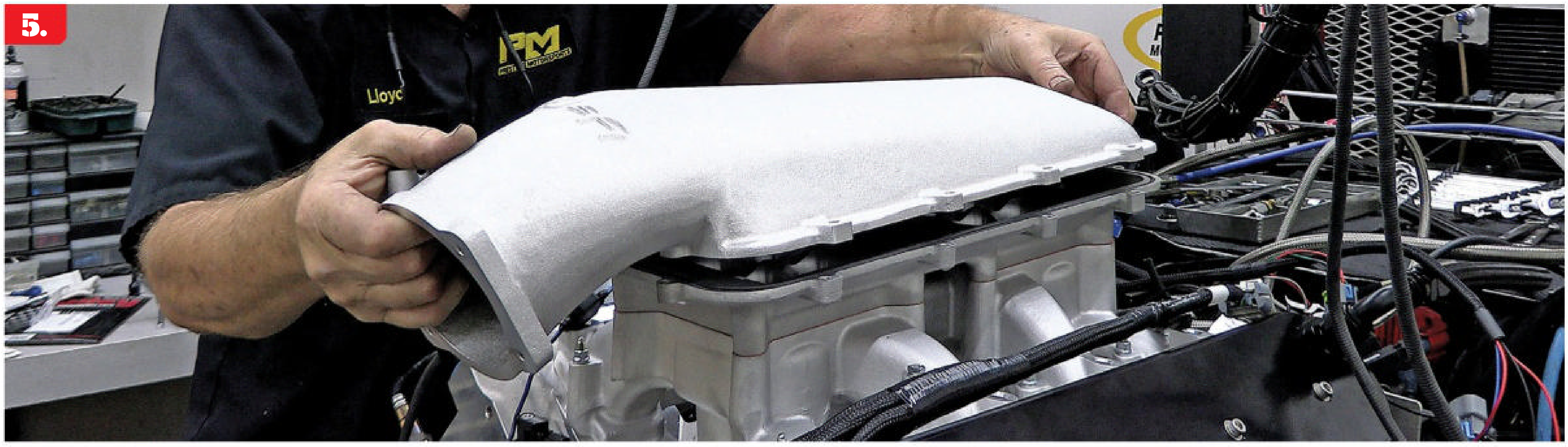

HOLLEY MID-RISE

This is definitely the odd ball of the group. All the other intakes we are testing have a large open plenum feeding eight equal-length runners. This is what you probably would call the standard LS EFI configuration. But the Mid-Rise is more like an old-school dual-plane intake.

The Mid-Rise uses a base from Holley's LS 2x4 intake manifold that is designed for two carburetors or twin four-barrel throttle bodies, but the top is replaced with a similar front breather manifold top as the other intakes and the lower section splits the intake into two distinct sections with only a few shared runners. The runners are also on two different levels, and the result is some very long runner lengths. This truly is a very unique intake design when it comes to EFI engines.

On the dyno the results were quite interesting. For the health of the dyno mule we only began the pull at 4,000 rpm (engine dynos can actually be damaging to the pistons and bearings in an engine if you begin the pull too low because it holds the engine rpm low against the spiking pressure of combustion), but we think this manifold shines even lower.

Although it didn't lead the pack in any of the peak numbers, this intake set itself apart because of how effectively it made torque up to 4,800 rpm or so. From the beginning of the pull up to 4,500 rpm it made the most torque overall, and until 5,500 it was only bested by the two Hi-Ram intakes we tested.

The key to remember with the Mid-Rise is we don't race engine dynos. Yes, if you want to bench race and compare dyno numbers, the Mid-Rise will get lost in the pack. But the guys at Prestige said for the regular guy driving his hot rod on the street, if you put the different intakes on his LS and let him drive his car without knowing what was under the hood, he'd choose this intake 8 times out of 10. No, it doesn't make the most power, but it's big torque as soon as you touch the throttle and can make a car or truck a real blast to drive.

HOLLEY LO-RAM

The Lo-Ram intake shares the short runner lengths of the Ultra Lo-Ram but uses the same high-flowing plenum top and throttle body mount as the Hi-Ram. This raises the front height to a manageable 9.25 inches. This combo should still be able to fit underneath the hood of plenty of vehicles. One of the strengths of the Lo-Ram is it can accept an intercooler between the two sections to help cool the incoming air charge in boosted applications without getting too tall.

5. Finally, a front-breathing plenum top allows the attachment of a throttle body to feed air into the engine.

6. Without the plenum top in place, you can see how the runners on the Lo-Ram intake extend into the lower plenum a bit to help increase runner length.

7. One of the main differences we can see between the Ultra Lo-Ram and the Lo-Ram (seen here) is the curved upper section that creates more plenum area and changes the angle of the throttle body.

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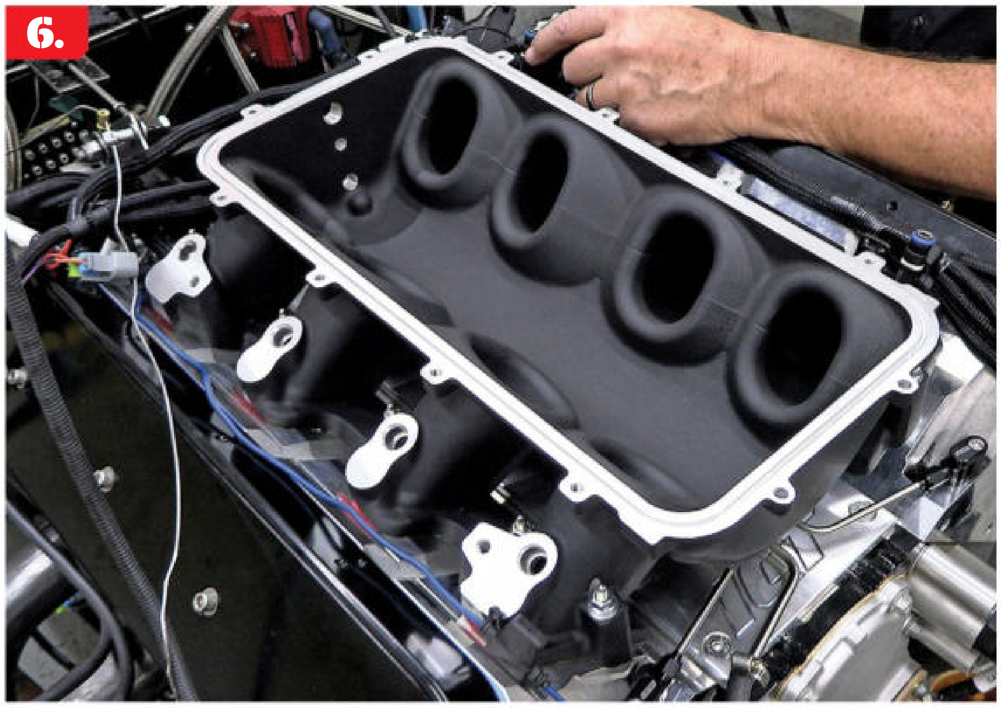

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On the dyno the Lo-Ram performed well all-around. Peak numbers were 542 lb-ft of torque at 5,700 rpm and 627.9 hp at 6,700. Averages across the range were 512.8 on the torque and 532.6 hp.

HOLLEY LO-RAM WITH 1-INCH SPACER

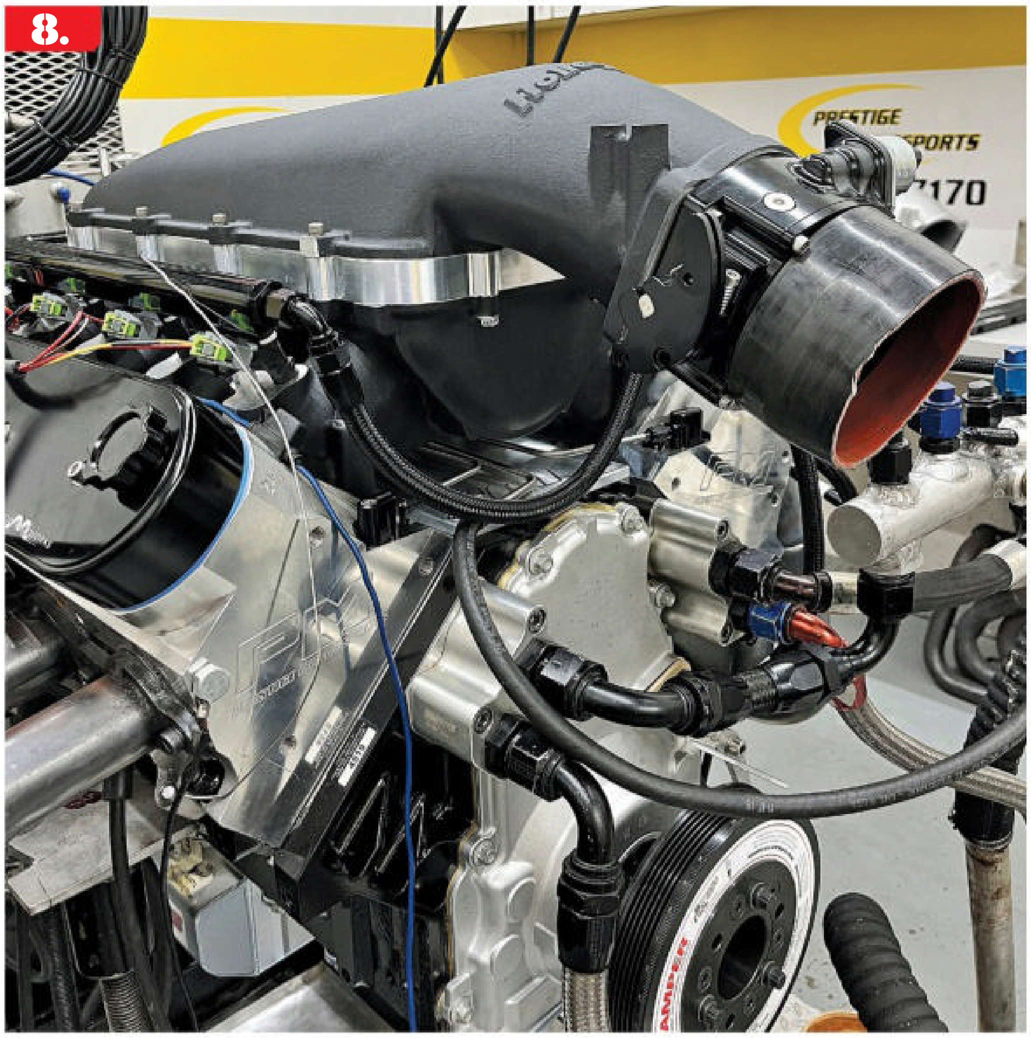
In this test we kept the same Lo-Ram intake manifold but the guys at Prestige wanted to test it with a 1-inch aftermarket spacer beneath the lower section and the plenum top. Not that this is not a Holley component. In the good-old days of carburetors, adding a plenum spacer between the carburetor and the intake manifold was often a good way to squeeze out a few extra ponies.

We suppose a few manufacturers are making spacers like this with the idea that more plenum area will help high-rpm power like with the carb spacers. But on the dyno we really didn't see any benefit. We saw an increase of 2.3 lb-ft of torque but lost 4.3 hp. Overall, the two lines on the dyno graph basically followed the same path.

The conclusion we drew is that the engineers at Holley really did their homework and came up with an optimized product with the Lo-Ram. Maybe there is more of a difference in boosted applications, but if you are running your engine naturally aspirated, keep your money.

HOLLEY HI-RAM

With a 12.32-inch height, the Hi-Ram definitely lives up to its name. So, hood clearance was obviously not a consideration in its design.



8. The 1-inch plenum spacer we tested on the Lo-Ram didn't really do anything. Our diagnosis, at least with a naturally aspirated engine configuration, is that Holley's engineers did a good job with the Lo-Ram intake design and there isn't really too much to be improved upon here.

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No, the Hi-Ram is all about producing power, and this intake does that in spades. Even with the longer runners, the Hi-Ram loves to operate in the upper-rpm range. It turns out the Hi-Ram provides the best of both worlds. Peak torque jumped up 8.6 from our previous best with the Mid-Rise and horsepower increased 1.9 from the Ultra Lo-Ram. And the averages across the range were even better with improvements over our previous bests of 13.6 and 14.5 respectively to get 530.5 lb-ft of torque and 550.1 hp. Those kinds of improvements across the range are pretty hard to come by. No wonder the Hi-Ram is such a popular option when it comes to big-power engine packages.

PORTED HOLLEY HI-RAM

Like the 1-inch spacer, this test is another throw-in for a little additional insight. Prestige CNC ports its cylinder head castings and has developed a CNC porting program for the Hi-Ram for a big-power engine being built. Since we had that on hand, we decided to try it, too. The plenum top was the same, only the runners had been ported.

This time around the ported intake runners did probably what you would expect. In the lower rpm range the larger runners caused the engine to lag the stock Hi-Ram a bit until the upper-rpm range when the engine needed even more airflow. By 6,300 rpm the CNC Hi-Ram took over and never looked back. But, let's be honest, how often do you need power beyond 6,300 rpm if you are driving on the street. The CNC-ported Hi-Ram definitely has its place, but it's on the big-power, high-rpm screamers that will see most of their time on the dragstrip.

So, what did we learn? There are no losers here. Just like in a good mechanic's toolbox, there is a correct tool for every job. The key is to be honest about what you are looking for in your ride and find the correct intake manifold that will increase your enjoyment and give you the most bang for your buck. ACP

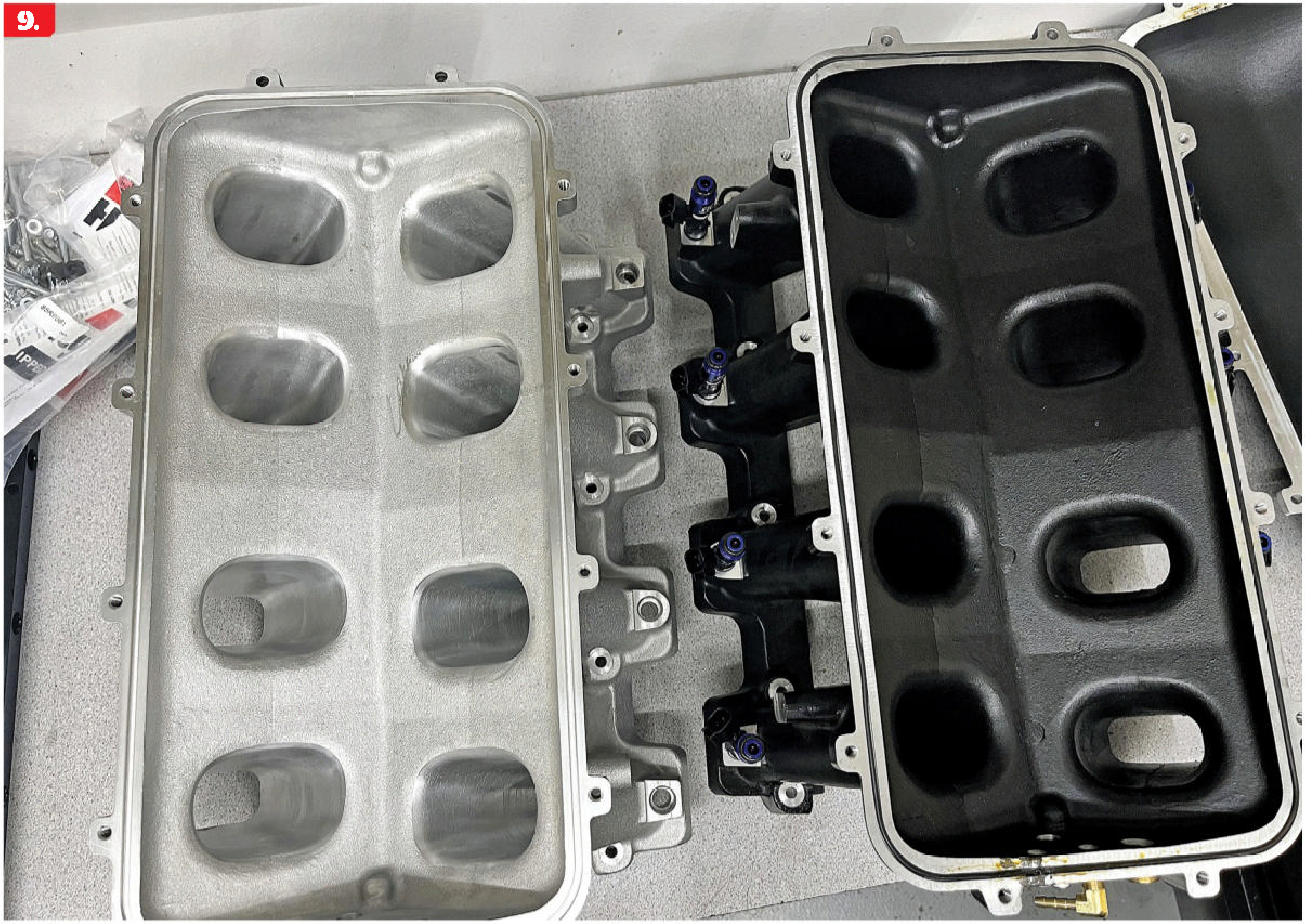
SOURCES

HOLLEY PERFORMANCE
(866) 464-655
holley.com

PRESTIGE MOTORSPORTS
(704) 782-7170
prestigemoto.com

9. That's the stock Hi-Ram lower section on the right and Prestige's CNC-ported version on the left. The differences are minimal, but they did have some impact on the dyno.

9.



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BY **NICK LICATA** PHOTOGRAPHY BY **JOHN JACKSON**

HUMBLE BEGINNINGS

MIKE FISHER'S **'67** CAMARO

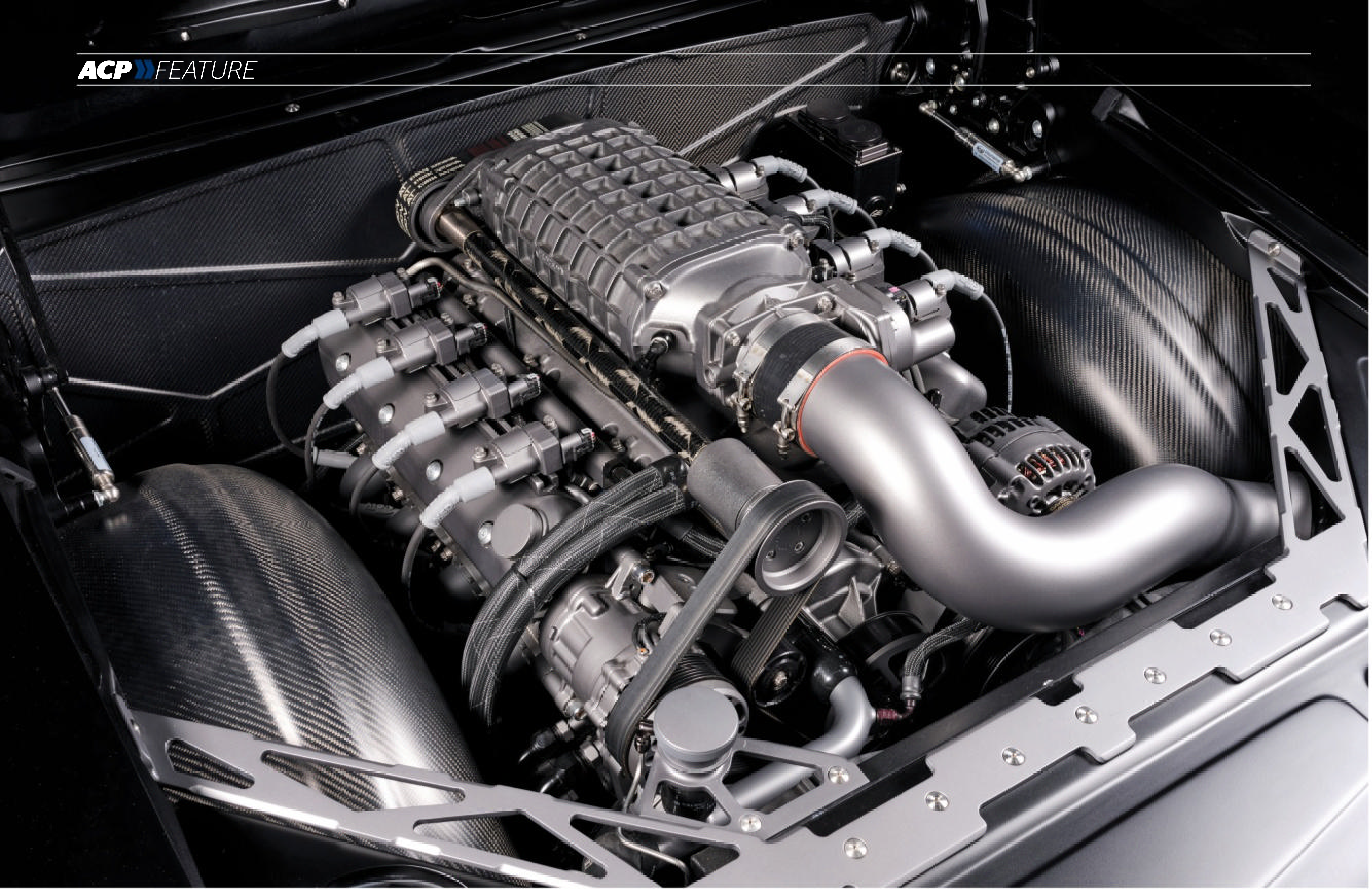
"Originally, I intended to just take the car in for an LS swap," Mike Fisher, owner of this remarkable '67 Camaro, confesses. "After spending some time with Jeremy Miranda at the Miranda Built shop in Boynton Beach, Florida, and seeing what he and his team were capable of, the LS swap turned into a full-on redo–a total ground-up restoration with tons of one-off custom nuances."

This occurrence is not unheard of with car owners looking to do some minor upgrades; although every situation is unique and outcomes vary, Mike's '67 Camaro is now an absolute gem.

The Delray Beach, Florida, resident was introduced to the car hobby by learning how to wrench on his father's projects well before he was of driving age. "My first car was an LS1-powered fourth-gen Camaro with a six-speed–the car my father taught me to drive a manual," Mike recalls. Instilled in his biological makeup, the car passion stuck, so later in life he set sights on a vintage Camaro–a first-gen was something he'd always dreamed of owning. He found a nice example in the west coast of Florida. It had original sheetmetal and was in great shape, which he drove for a while before getting the itch for LS power.

Once Mike saw firsthand all the incredible builds in various stages at Miranda Built, his vision changed and the creative wheels started spinning between Mike and Jeremy on how to turn this '67 into a uniquely built classic while still retaining the Camaro's biological makeup. It started with power and took off from there.

Under the hood now lies an LS Chevrolet Performance LS3 crate engine upgraded with a Texas Speed stage 2 forced-induction camshaft to accompany the Magnuson TVS3300 supercharger. The powerplant is dressed up in Katech Engines valve covers and coil relocation kit, along with a custom 4-inch aluminum air intake tube. Ultimate Headers 1 $^{7}/_{8}$-inch headers expel waste through a one-off 3-inch exhaust system where a pair of Borla Pro XS mufflers attempt to stifle the chaos inflicted by the 650hp mill.



STOP

1200
Suite B

The ensemble is fronted with a Concept One eight-rib front drive system and properly cooled by an aluminum Griffin radiator and a SPAL electric fan.

A work of art, the engine bay is inundated with custom accents, including custom-painted Ringbrothers hood hinges, carbon-fiber inner fenders, Anvil carbon firewall, fender braces, close-out panel, core support, and a wide array of other Miranda Built custom fabricated nuances.

Gear changes come by way of a T56 trans upgraded by RPM Transmissions; a McLeod twin-disc clutch ensures smooth and precise shifting. A Ford 9-inch rearend houses an Eaton Trutrac posi unit with 3.70 cogs and 31-spline axles–a robust combination more than capable of handling every bit of mayhem Mike throws its way.

Now armed with a kick-ass supercharged engine, a comparable suspension system would need to be sourced to contain that power while offering a late-model muscle car ride. A short conversation between Mike and Jeremy led to bolting in a Roadster Shop SPEC chassis under the Camaro. On board is a Roadster Shop (RS) four-link rear suspension system outfitted with Fox 20-way adjustable shocks, Fox springs, and an RS Panhard bar. Up front rides the same Fox dampers, an RS sway bar, and Wilwood spindles, which contributes to that impeccable low-slung Pro Touring stance.

A set of Baer brakes were commissioned to deliver swift stopping while peeping behind a set of 19-inch ADV.1 ADV10 Track Spec wheels wrapped in Michelin Pilot Sport rubber–a desired compound designed for serious lateral-g operation. A Wilwood proportion valve properly distributes pressure between the front and rear binders coaxed by the Bear Remaster master cylinder.

The cockpit unveils a performance race theme combined with today's creature comforts for a copacetic operations office containing a host of one-off, Miranda Built interior bits designed to bring this first-gen Camaro in the modern world while keeping in touch with the car's vintage roots.

The Miranda Built custom dash is nestled in a custom aluminum insert populated with Auto Meter gauges, Alpine iLX-W650 multimedia receiver, and Restomod Air vents, pushing atmosphere via the Vintage Air HVAC system. The custom center console accommodates the Clayton Machine Works shifter and custom switch panel. Steering is directed by a Sparco wheel propped atop an ididt column.

The black leather Alcantara suede upholstery draped over the Sparco carbon seats and custom door panels conform with the Avant Garde Design Signature Graphite carpet for a sinister yet elegant scene. A custom chromoly four-point rollbar offers additional driver safety and a good amount of chassis stiffness.

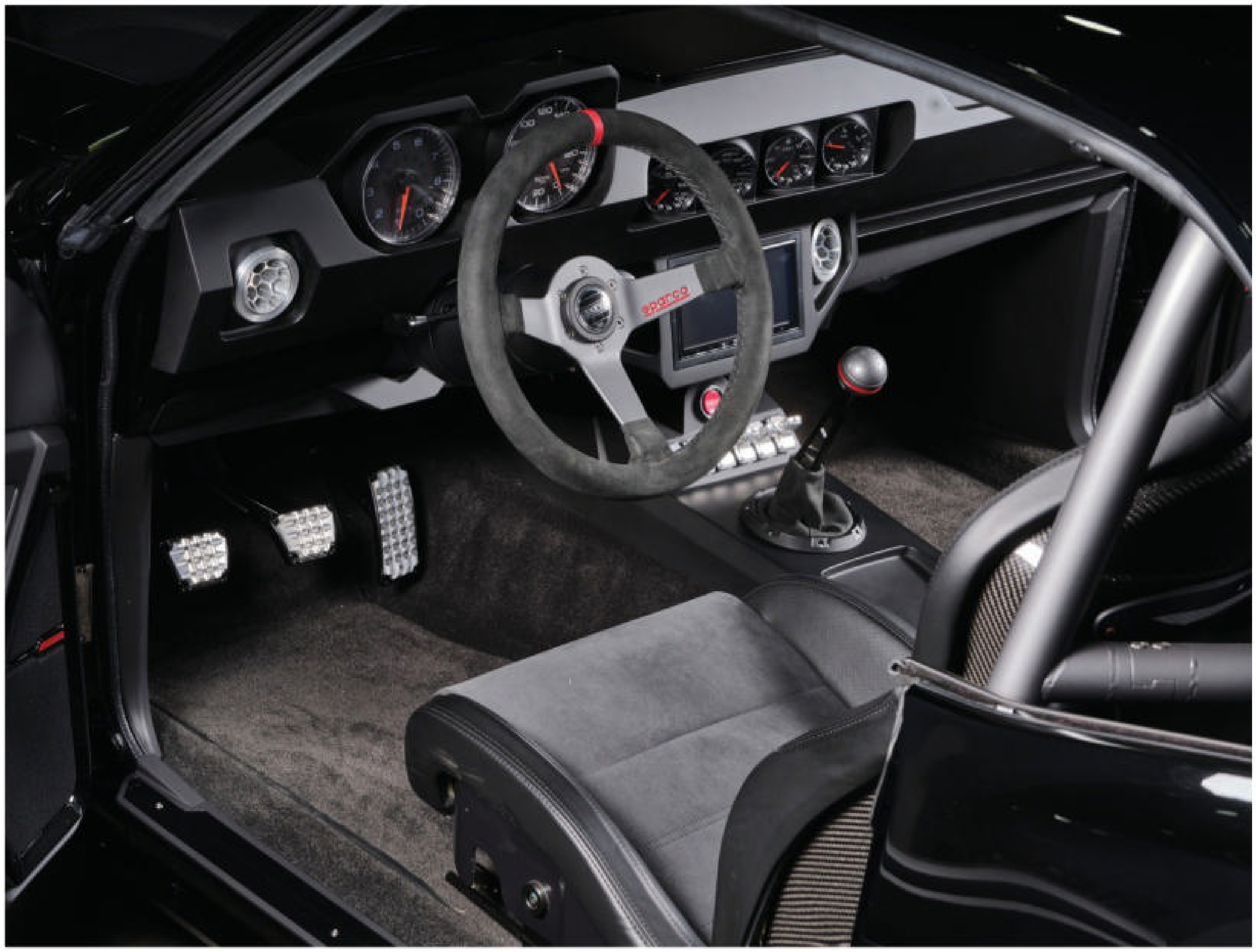
As a common occurrence with Miranda Built hot rods, the body mods are plenty. The front of the Camaro flaunts a custom grille and lower diffuser, custom bumper, LD flush-fit turn signals, JW headlights, and a Ringbrothers carbon-fiber hood. Out back, the Miranda crew fabbed up custom recessed quarter-panels then focused on a custom taillight panel and one-off taillights.

IDO 456
ANTIQUE

The crew at Relic Restomods prepped the sheetmetal to perfection, then Mitch at Relic laid down multiple layers of clear on top of PPG black pigment–a decadent choice, giving the '67 an ominous presence.

Mike's original idea of an LS swap transformed his F-body into a one-off hot rod with an aggressive demeanor and heaps of performance. "It's amazing how the Miranda crew was able to take a mildly restored Camaro and turn it into the baddest '67 Camaro I've ever seen," Mike declares. "It's hard to believe it's mine.

"So far the best experience with the car was seeing the look on my dad's face when he drove it for the first time," Mike says. "Driving down the beachside in this Camaro just as we did 20 years ago brought back some great memories, and now we are looking forward to creating new ones.



TECH ✓

OWNER: Mike Fisher, Delray Beach, Florida
VEHICLE: ’67 Camaro

Engine
TYPE: Chevrolet Performance LS3
DISPLACEMENT: 376 ci
COMPRESSION RATIO: 10.7:1
BORE: 4.065 inches
STROKE: 3.622 inches
CYLINDER HEADS: Aluminum L92-style port
ROTATING ASSEMBLY: Nodular iron crankshaft, powdered metal connecting rods, hypereutectic aluminum pistons
CAMSHAFT: Texas Speed Stage 2 Forced Induction
INDUCTION: Magnuson TVS2300 supercharger, custom Miranda Built 4-inch aluminum intake tube
ASSEMBLY: GM
EXHAUST: Ultimate Headers 1$^7/_8$ inch, Miranda Built custom 3-inch exhaust, Borla ProXS mufflers
ANCILLARIES: MSD Multi-angle wires, Griffin aluminum radiator, Concept One water pump, Mechmen 200-amp alternator, Katech valve covers and coil relocation kit, Ringbrothers Air Frame hood hinges, Ricks Tanks 19-gallon fuel tank
FRONT DRIVE SYSTEM: Concept One eight-rib
OUTPUT: 650 hp at 6,500 rpm, 600 lb-ft at 4,000 rpm

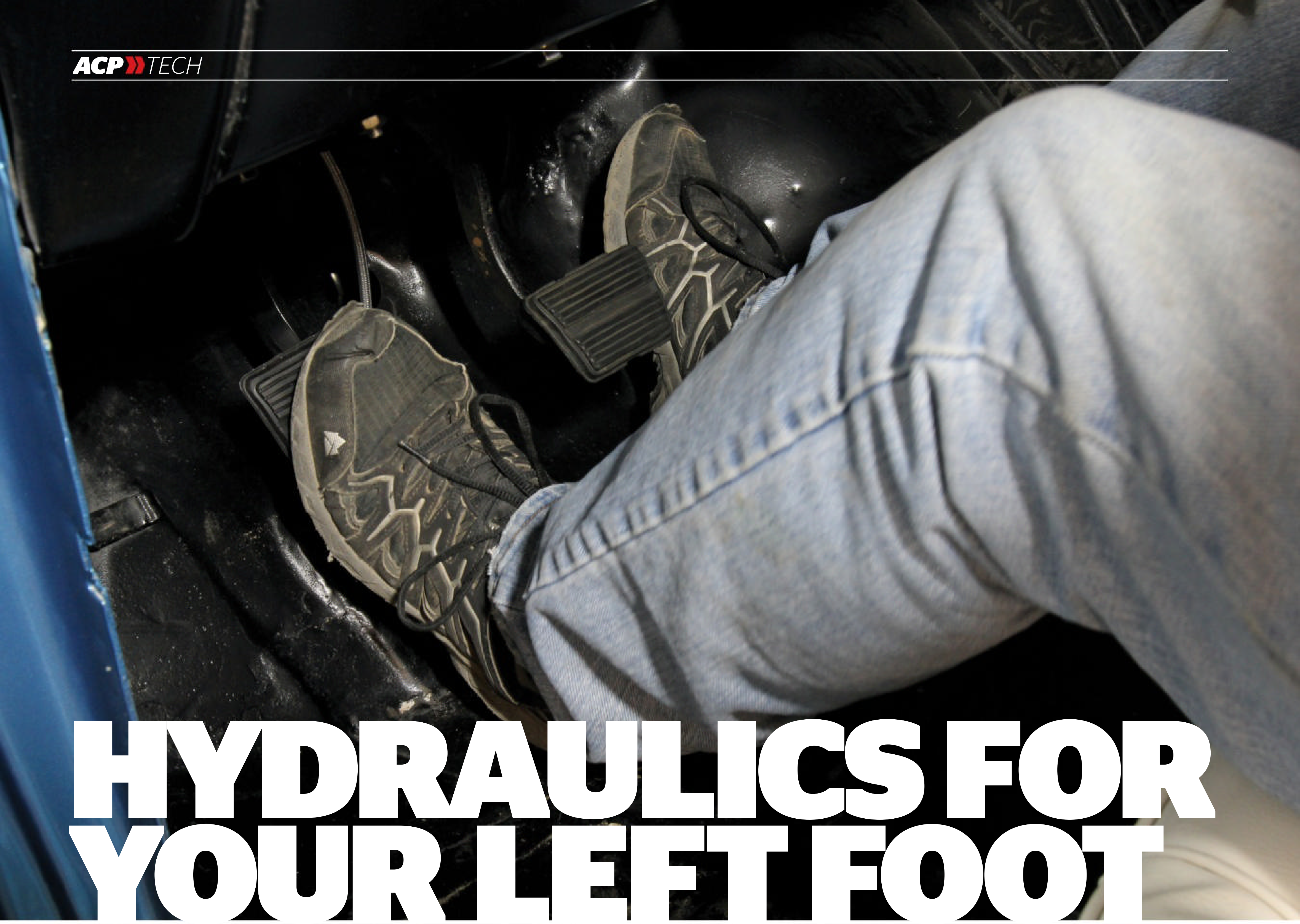
Drivetrain
TRANSMISSION: RPM Transmissions T56
CLUTCH: McLeod
REAR AXLE: Ford 9-inch rearend, Truetrac limited-slip posi, 3.70 gearset, Strange 31-spline axles

Chassis
CHASSIS: Roadster Shop SPEC chassis
FRONT SUSPENSION: Wilwood spindles, Fox 20-way adjustable shocks, Roadster Shop sway bar
REAR SUSPENSION: Roadster Shop four-link, Fox 20-way adjustable shocks, Roadster Shop Panhard bar
BRAKES: Baer 14-inch rotors, six-piston calipers front, Baer 13-inch rotors, four-piston calipers rear, Baer Remaster master cylinder, Wilwood proportion valve

Wheels & Tires
WHEELS: ADVI Trac Spec (19x9 front, 19x12 rear)
TIRES: Michelin Pilot Sport; 265/30R19 front, 325/30R19 rear

Interior
UPHOLSTERY: Leather Alcantara black suede, Avant Garde Design custom door panels, AG Signature Graphite carpet
INSULATION: DEI Boom Mat
INSTALLATION: Avant Garde Design (Palm City, FL)
SEATS: Sparco Carbon Black, stainless aviation-style lap belt
STEERING: Ididit column, Sparco steering wheel
SHIFTER: Clayton Machine Works
PEDALS: Clayton Machine Works
DASH: Custom fabricated by Miranda Built
INSERT: Custom aluminum by Miranda Built
INSTRUMENTATION: Auto Meter
CENTER CONSOLE: Custom by Miranda Built
HVAC: Vintage Air
VENTS: Restomod Air
WIRING: Infinity Box by Miranda Built
ENTERTAINMENT SYSTEM: Alpine ILX650 head unit, JL Audio five-channel amplifier, 6.5-inch speakers (X4), JL Audio W3 10-inch sub

Exterior
BODYWORK: Relic Restomods (Richmond, IL)
PAINT: PPG Black by Mitch at Relic
QUARTER-PANELS: Custom recesses by Miranda Built
HOOD: Ringbrothers carbon fiber
WINDSHIELD: Camaro convertible with painted trim
GRILLE AND DIFFUSER: Custom by Miranda Built
TURN SIGNALS: LED flush fit
FRONT BUMPER: Custom by Miranda Built
REAR BUMPER: Custom by Miranda Built
HEADLIGHTS: JW speaker
TAILLIGHTS: Custom by Miranda Built
TAIL PANEL: Custom by Miranda Built
OUTSIDE MIRRORS: Ringbrothers
DOOR HANDLES: Painted factory by Relic Restomods



HYDRAULICS FOR YOUR LEFT FOOT

BY **JEFF SMITH** PHOTOGRAPHY BY **THE AUTHOR**

Technology has a habit of eventually making a process so simple and easy that it's hard to deny. Car guys tend to be traditionalists–you know, the types who say, "If it ain't broke don't fix it!" But then a really favorable process like a hydraulic clutch release system comes along on new cars and the gradual conversion process begins.

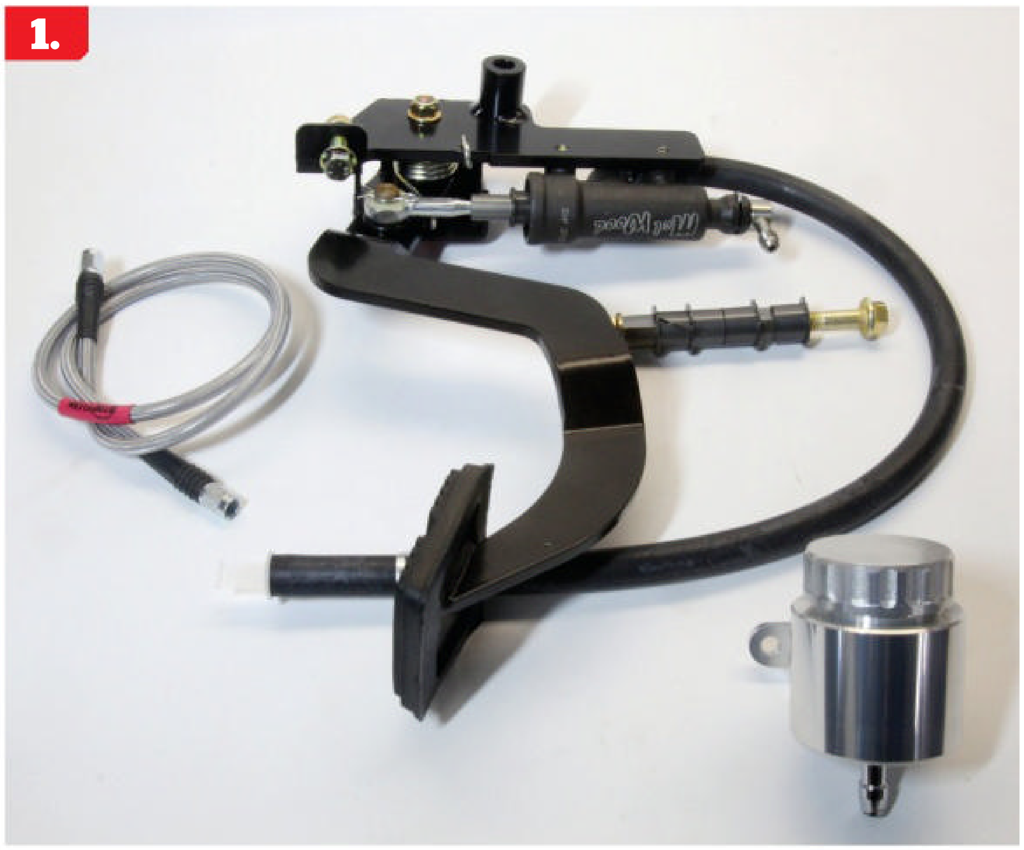
Anyone who rows his own shifts with a manual transmission knows all about the issues with mechanical clutch linkage. While the system works, it's often clumsy and awkward and fitting headers round that z-bar can be problematic. Hydraulic clutch release systems are complex in their own right, but the small hydraulic line down to the hydraulic release bearing eliminates all that mechanical monkey motion.

Early retrofit hydraulic conversions employed a fourth-generation Camaro hydraulic master cylinder adapted to older cars brought its own set of issues. These early kits required an angled adapter bolted to the firewall to position the Camaro clutch master to let's say a '60s-70s Camaro, Chevelle, or other early machines.

If you've tried this conversion, we don't have to tell you the issues involved with ensuring that the master is perfectly aligned with the clutch pedal actuator rod. If the angle is not perfect, the rod places a side load on the hydraulic master cylinder piston, which quickly wears the piston seal, creating a leak–which demands relocating the linkage and buying a new master. Some companies went so far as to create an adjustable master cylinder to make it easier to establish the proper angle.

All of these hassles were great reasons not to convert to a hydraulic clutch release system–until now. What it really took was for someone to come up with a better hydraulic master cylinder idea. That's what MalWood USA has accomplished. MalWood USA is a small company in Ottumwa, Iowa, that has built a better mousetrap. Instead of drilling holes in the firewall to mount a master, it was a far simpler idea to locate the hydraulic master directly to the clutch pedal assembly.

This immediately accomplishes two things: First, now you don't have to cut holes in your nice, virgin, firewall to mount a clutch master. The MalWood USA idea bolts the master directly to the pedal assembly with the actuator rod factory set, so there is no issue with bad angles that could cause a leak.

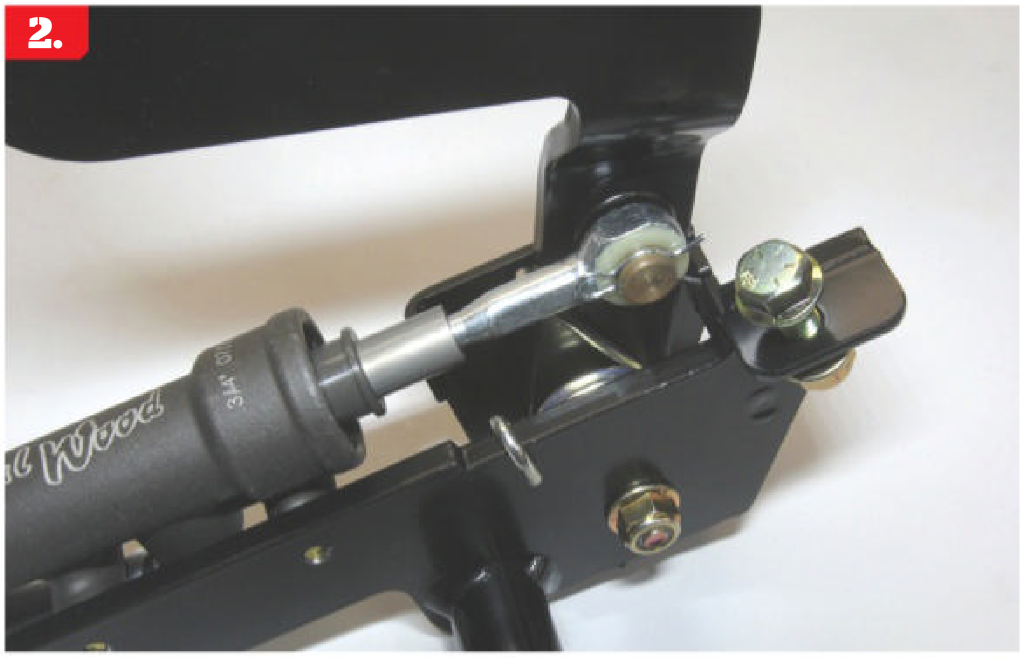


1.

1. The intelligent design of the MalWood USA hydraulic clutch assembly is obvious as soon as you see the clutch master cylinder attached directly to the pedal assembly. All the guesswork for installation is removed since all the location effort is built into the kit.

2. This view shows the large return spring built into the MalWood USA pedal assembly and also shows the actuator rod perfectly lined up with the master that eliminates all of the grief associated with other systems that require a custom-mounted master cylinder. Note the loose bolt and nut through the bracket. This mount reinforces the pedal assembly mount with the factory brake pedal box to prevent the clutch pedal assembly from hinging on the cross-shaft.

A NEW IDEA FOR HYDRAULIC CLUTCH RELEASE THAT WILL SOON BECOME THE ONLY WAY



2.

This makes the master cylinder installation incredibly easy because the new master cylinder pedal assembly bolts directly in place of the original clutch pedal. Once the pedal is in place, the only major decision is where to mount the clutch master reservoir. If your application has room, you can mount it under the dash as well so that the only access hole in the firewall is for the high-pressure hose routed to the hydraulic release bearing.

The only requirement for mounting the master cylinder reservoir is to place it at a height above the master so that the fluid will gravity feed from the reservoir to the master. That's it.

We were in the process of assembling our '66 big-block, four-speed Chevelle and we decided this was a perfect time to upgrade to a hydraulic clutch. What made the decision easy was that we did not have to punch large holes in the firewall. The interior and steering column had not yet been installed in the car, so this made it easier to shoot the photos.

The MalWood USA pedal system is designed to mate directly with the factory brake pedal box and comes with a new cross shaft that replaces the large shaft attached to the original clutch pedal. The MalWood USA system uses the stock pedal box, adding the new clutch pedal assembly with new bushings. The new steel shaft slides through both pedals and uses bolts on each end threaded into the shaft.

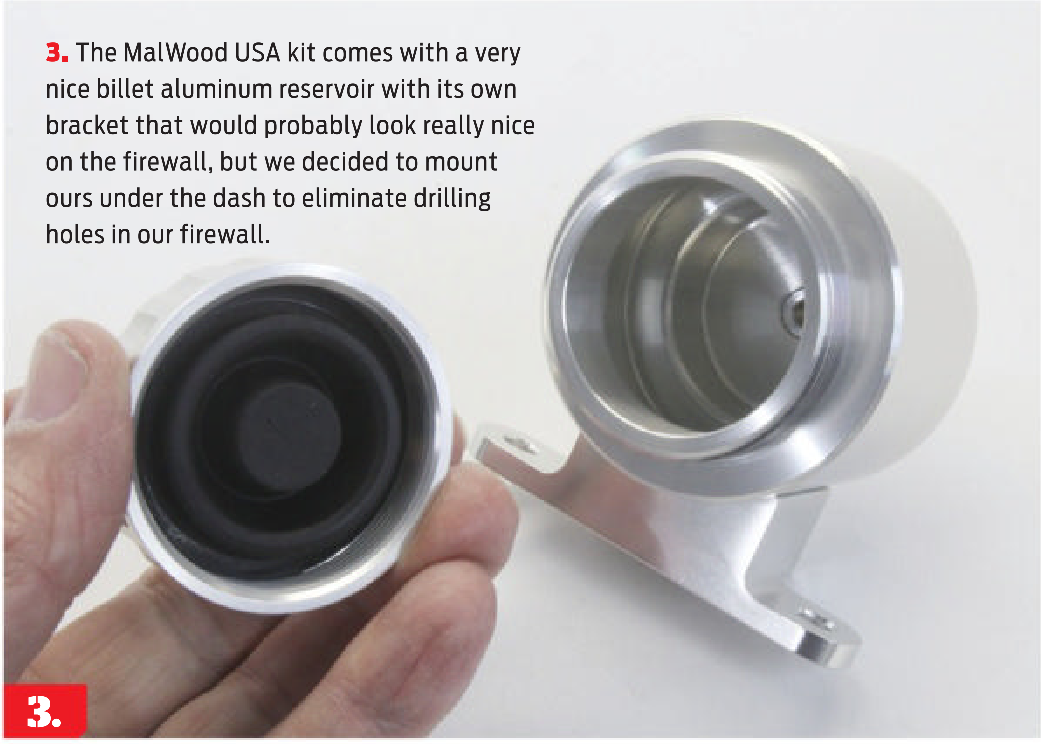
If you are converting an automatic transmission car to this new hydraulic clutch release system, search around to see if you can find a single, used, manual brake pedal. If not, you will unfortunately have to buy a complete pedal set in order to obtain the correct brake pedal. We searched but did not find a source that offers just the manual transmission clutch pedal by itself.

Mounting the new MalWood USA hydraulic pedal is a fairly simple process. We threaded the long grade 8 bolt into the steel sleeve through the hydraulic pedal assembly and removed the small bolt and nut on the flange near the front of the assembly. We also placed two of the new plastic bushings into the original brake pedal. We threaded the new shaft through the brake pedal and then attached the bolt on the other end. At this point, we did not tighten anything until we had the entire system attached.

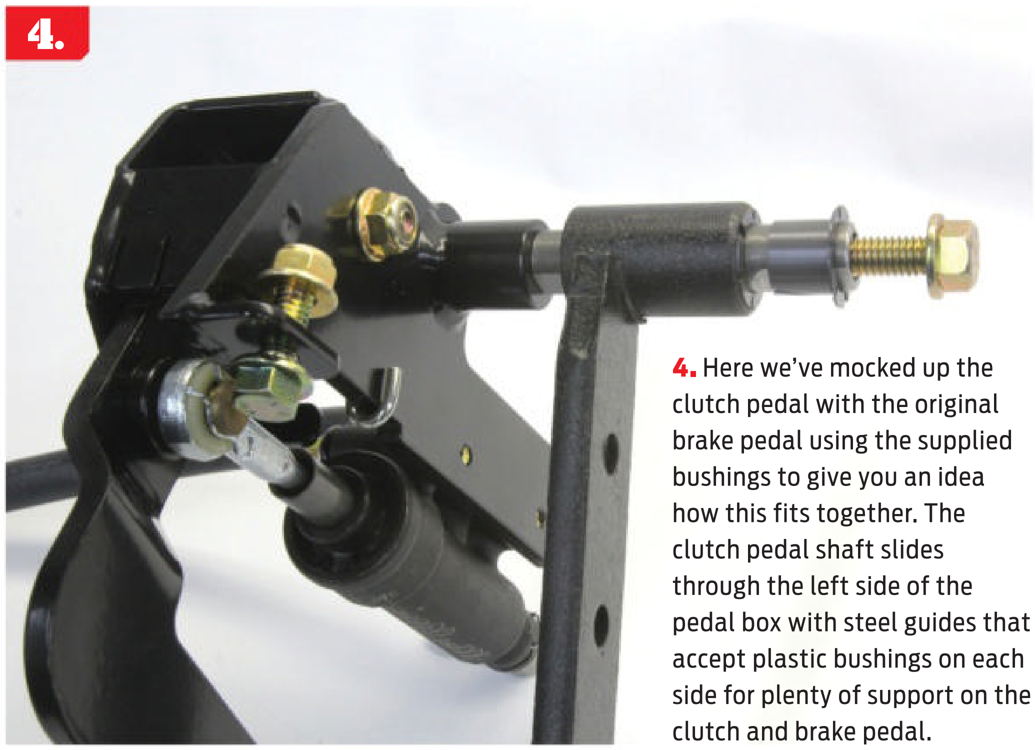
We then removed the original clutch pedal rubber bumper that was pressed into the original pedal box. This left a rectangular hole in the pedal box that aligns with the bracket bolthole in the MalWood USA pedal assembly.

We pulled the pedal assembly back out of the car because the bolt did not easily fit through the hole because of the powdercoating, which made it difficult to line up the MalWood USA mount with the existing hole in the pedal box.

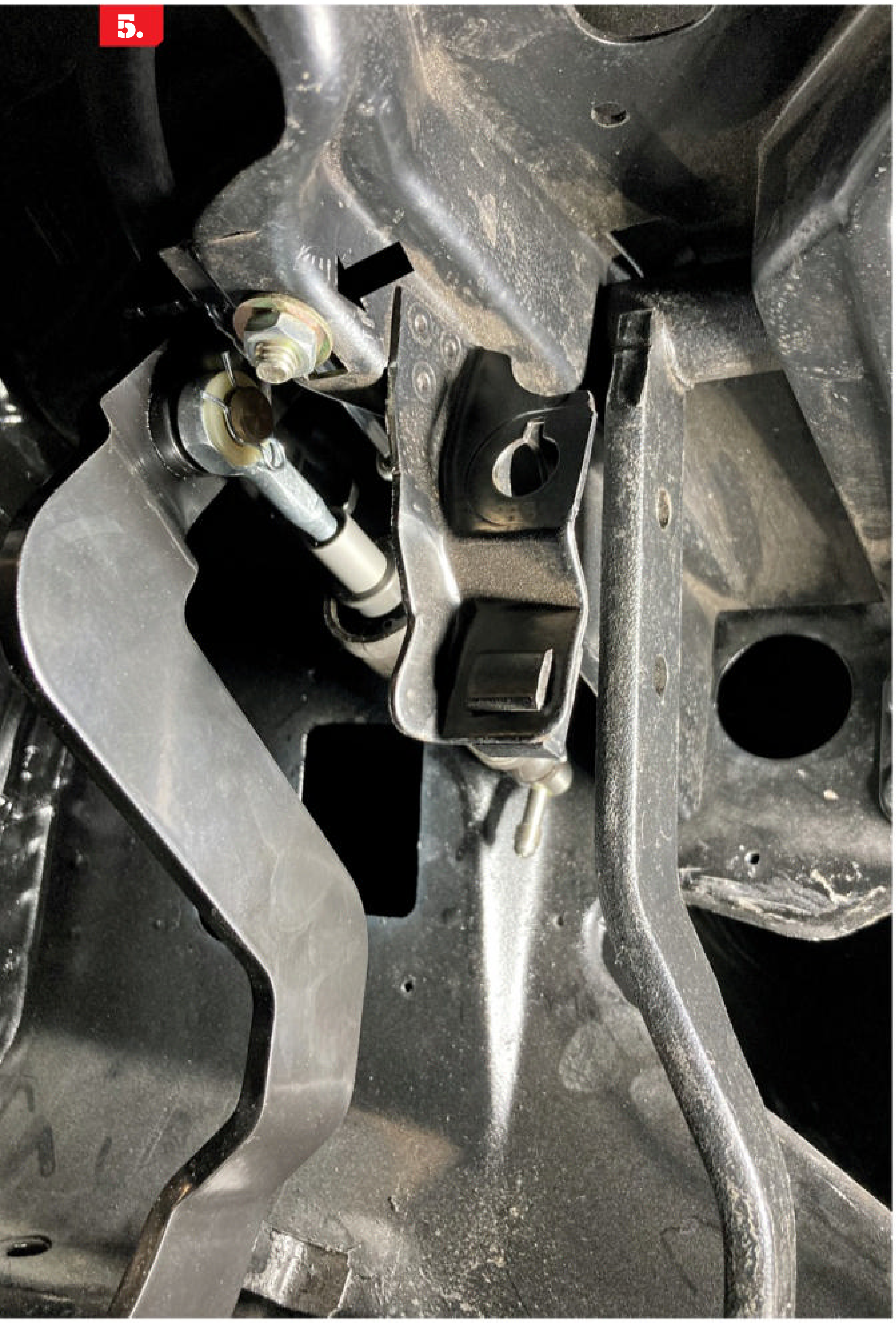
We simply drilled the hole slightly in the MalWood USA bracket to ensure the bolt slid through the hole properly. Next, to align the pedal assembly hole with the rectangular hole in the pedal box, we had to use a large pair of Channel lock pliers to squeeze the pedal box slightly so the holes lined up. This allowed us to easily slip the bolt through and tightened the nut. This secures the pedal assembly in the car and prevents it from rotating around the pedal shaft.



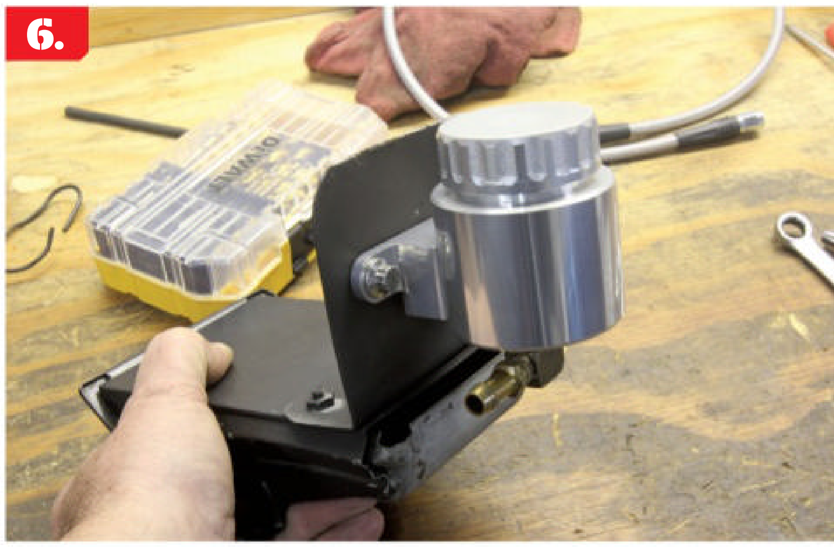
3. The MalWood USA kit comes with a very nice billet aluminum reservoir with its own bracket that would probably look really nice on the firewall, but we decided to mount ours under the dash to eliminate drilling holes in our firewall.



4. Here we've mocked up the clutch pedal with the original brake pedal using the supplied bushings to give you an idea how this fits together. The clutch pedal shaft slides through the left side of the pedal box with steel guides that accept plastic bushings on each side for plenty of support on the clutch and brake pedal.



5. This tight view of the pedal assembly in the car shows the $^3/_8$-inch bolt securing the pedal assembly bracket to the hole originally for the clutch pedal rubber pedal stop. This bolt and nut assembly secures the pedal assembly in the car.



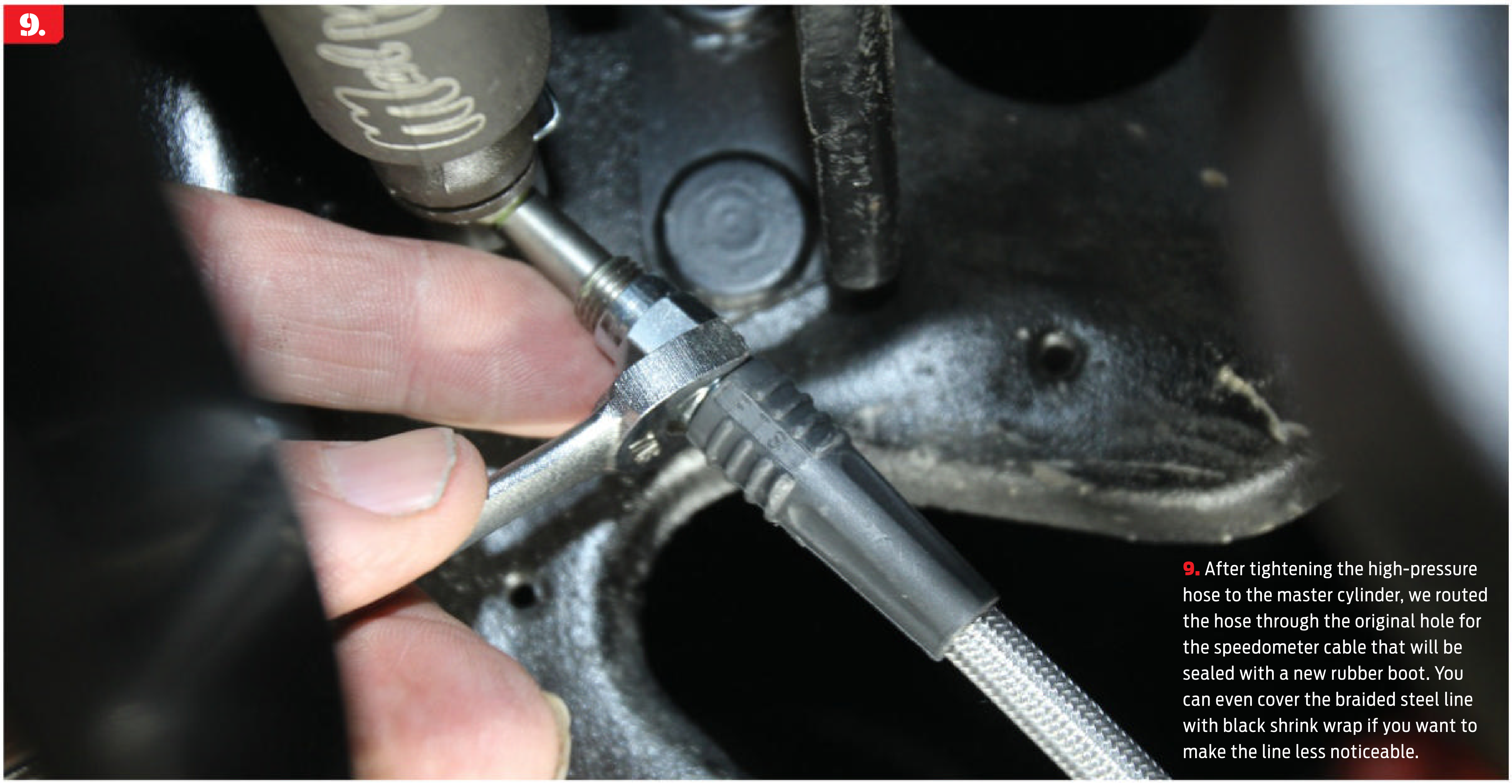
6. Make sure to mount the reservoir high enough to gravity feed fluid to the master. We considered mounting the reservoir directly to the pedal box, but this offered little room for filling the reservoir. Instead, we built a bracket that mounts on top of the ashtray mount and is quite sturdy.

7. The master cylinder is connected to the reservoir using the supplied rubber hose. Merely slip the hose over the barb fitting and secure it with the supplied spring clamp.

LUCAS
OIL PRODUCTS INC.
SYNTHETIC
BRAKE FLUID
DOT 4
12 FL OZ (354.9 mL)
MADE IN USA

8. The MalWood USA pedal assembly is designed to use either DOT 3 or DOT 4 hydraulic brake fluid. The company does not recommend, nor do you need high-temperature brake fluid since this system is not exposed to extreme temperatures. Also, do not use a DOT 5 silicone fluid. We dug up a small rubber bulb to fill the reservoir that we located under the dash.

9.



9. After tightening the high-pressure hose to the master cylinder, we routed the hose through the original hole for the speedometer cable that will be sealed with a new rubber boot. You can even cover the braided steel line with black shrink wrap if you want to make the line less noticeable.

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With the hydraulic pedal assembly in the car, the only real challenge of this installation was deciding where to mount the billet aluminum hydraulic reservoir. We decided that rather than drill holes to mount the reservoir on the outboard side of the brake master on the firewall (which is not a bad option), we opted to mount the reservoir under the dash where it would be hidden from view.

We fabricated an aluminum bracket that bolted to the top of the ashtray mount. This might seem a spindly place to locate the reservoir, but the factory ashtray bracket is quite sturdy. This places the reservoir above the level of the master cylinder with enough head room above the reservoir to allow easy access to fill with brake fluid. This can be easily filled using a small rubber suction bulb you can find on Amazon for less than $10.

We then slid the rubber fill hose from the master cylinder over the top of the pedal box and connected it to a right angle fitting we installed in our reservoir to make connecting the hose easier. Finally, we threaded the included high-pressure AN hose from the master cylinder and routed it through the hole in the floor that was originally for the speedometer cable. In our Chevelle, we're using an electronic speedometer so the speedometer cable hole was a convenient place to route the high-pressure hose. We then made a plate to cover the original mechanical linkage hole that is now not needed.

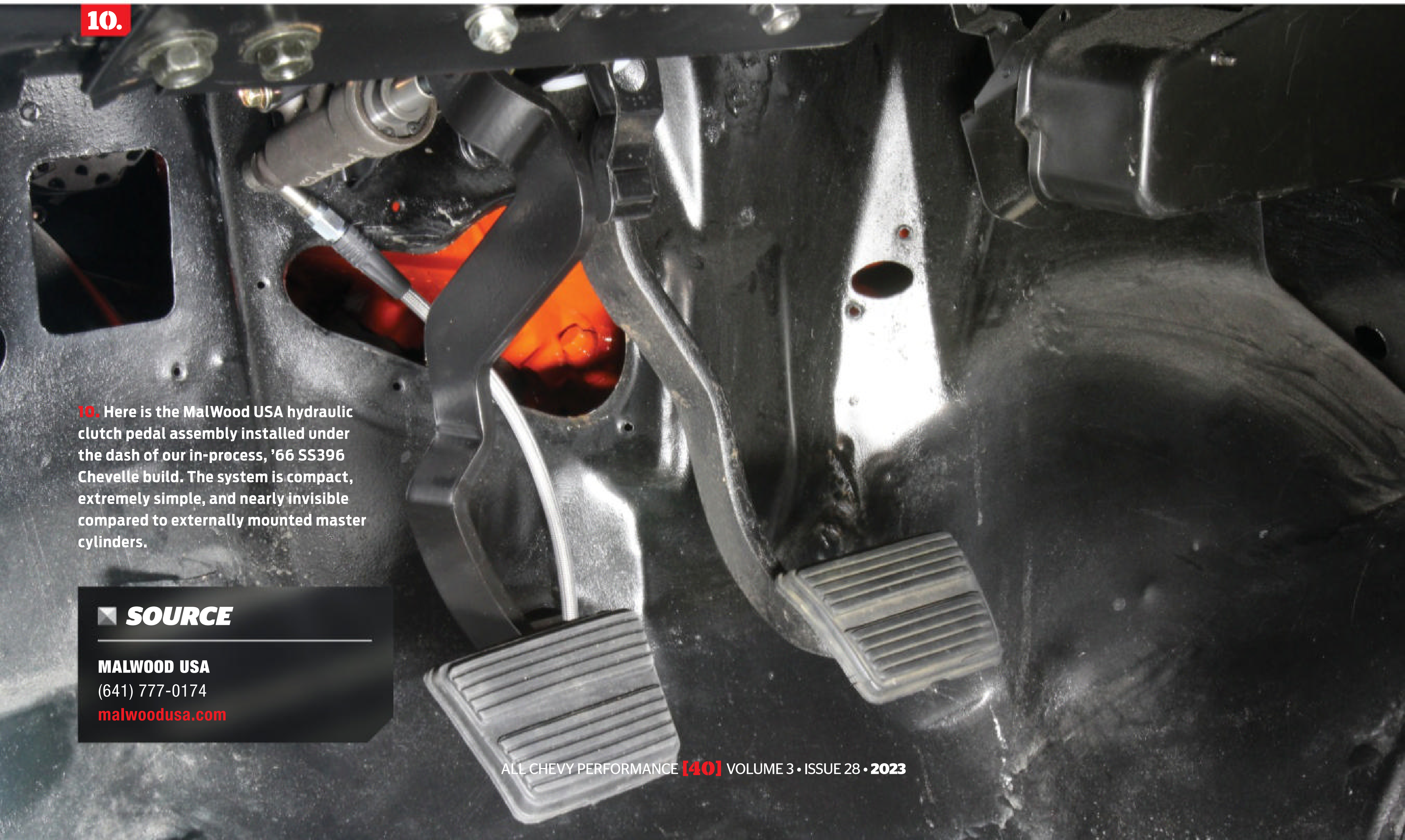
The focus on this story was to concentrate on the installation of this new MalWood USA hydraulic pedal assembly so we'll save the details of how to properly install and adjust the hydraulic throwout bearing for another story down the road. But the installation was relatively simple, and we're now on our way to simpler clutch operation by way of hydraulics. ACP

VEHICLE APPLICATIONS

'67-69	CAMARO
'70-81	CAMARO
'55-57	CHEVY
'63-66	CORVETTE
'68-82	CORVETTE
'62-65	CHEVY II
'66-67	CHEVY II
'68-72	NOVA
'64-66	CHEVELLE AND GM A-BODIES
'67	CHEVELLE AND GM A-BODIES
'68-72	CHEVELLE AND GM A-BODIES
'60-66	CHEVY AND GM TRUCKS
'67-72	CHEVY AND GM TRUCKS
'73-87	CHEVY AND GM TRUCKS
'88-94	CHEVY AND GM TRUCKS

PLUS, SEVERAL FORD AND MOPAR APPLICATIONS

10.



10. Here is the MalWood USA hydraulic clutch pedal assembly installed under the dash of our in-process, '66 SS396 Chevelle build. The system is compact, extremely simple, and nearly invisible compared to externally mounted master cylinders.

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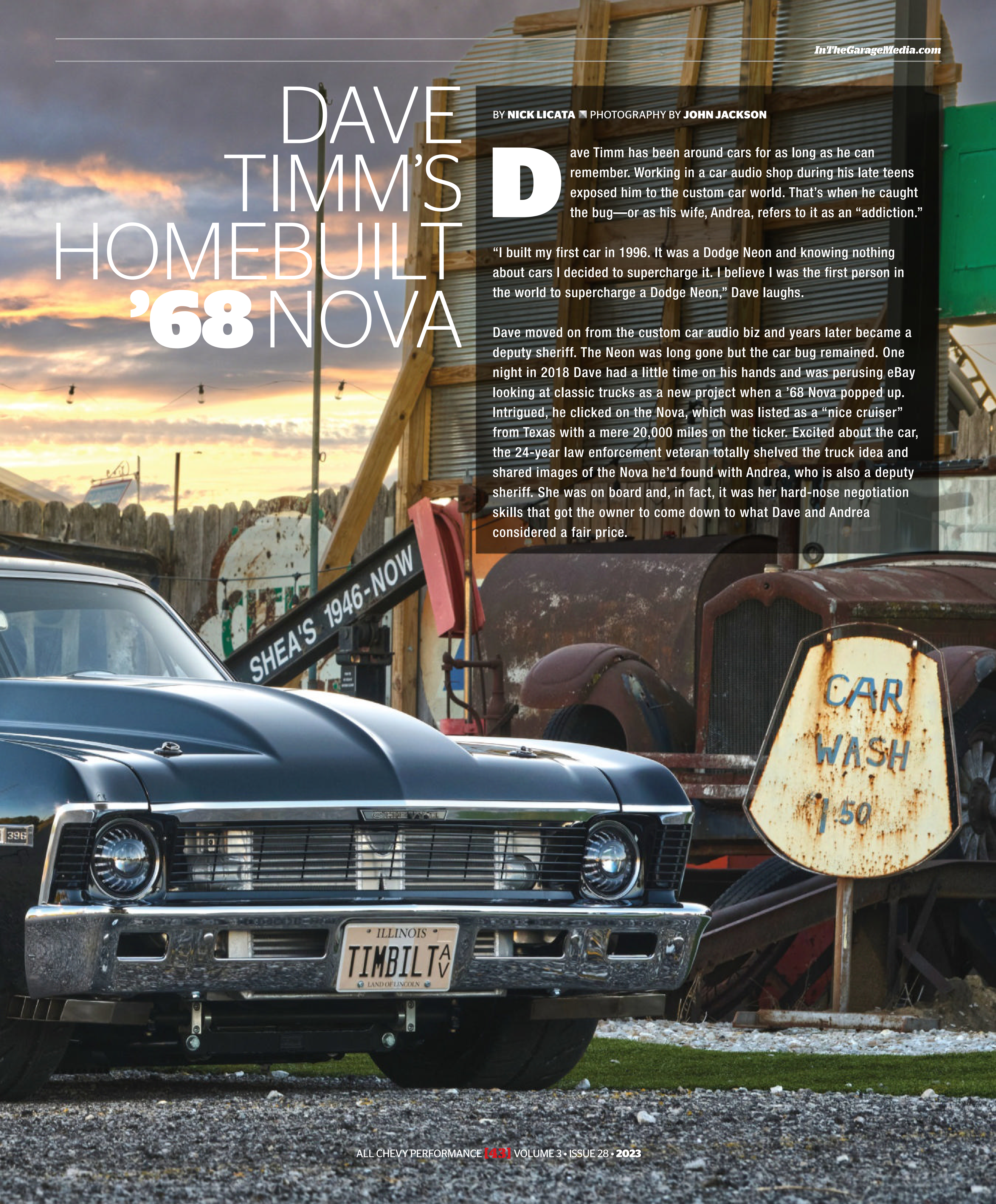
DAVE TIMM'S HOMEBUILT '68 NOVA

BY **NICK LICATA** ◾ PHOTOGRAPHY BY **JOHN JACKSON**

Dave Timm has been around cars for as long as he can remember. Working in a car audio shop during his late teens exposed him to the custom car world. That's when he caught the bug—or as his wife, Andrea, refers to it as an "addiction."

"I built my first car in 1996. It was a Dodge Neon and knowing nothing about cars I decided to supercharge it. I believe I was the first person in the world to supercharge a Dodge Neon," Dave laughs.

Dave moved on from the custom car audio biz and years later became a deputy sheriff. The Neon was long gone but the car bug remained. One night in 2018 Dave had a little time on his hands and was perusing eBay looking at classic trucks as a new project when a '68 Nova popped up. Intrigued, he clicked on the Nova, which was listed as a "nice cruiser" from Texas with a mere 20,000 miles on the ticker. Excited about the car, the 24-year law enforcement veteran totally shelved the truck idea and shared images of the Nova he'd found with Andrea, who is also a deputy sheriff. She was on board and, in fact, it was her hard-nose negotiation skills that got the owner to come down to what Dave and Andrea considered a fair price.



They enjoyed the car for a while–cruised it, showed it, and drove it a bunch. They were totally committed to leaving the car alone and keeping it just how they bought it. That was up until Dave attended the 2019 SEMA show when some folks working in the aftermarket enticed him with some sponsored goodies to upgrade the car. It started out with bolting on a set of wheels and quickly snowballed from there. "I really had a hard time at first as I promised myself I was going to leave this car alone, but that went out the window 27 sponsors later," Dave chuckles.

Once the decision was made to upgrade the car, he went all in from the ground up. "I built this car to represent my shop and to show what I'm capable of as a one-man show," Dave says. "I also wanted to display some of the best aftermarket parts from the most reputable companies in the industry." Still working as a deputy sheriff and building customer cars, Dave worked on the Nova during his free time between work shifts and being a dad and a husband. Things really got interesting when he committed to having his car debut at the 2021 SEMA show and had just 10 months to get it completed.

Starting under the hood, Dave went with a 565ci Merlin IV big-block and sent it off to NCP Speed and Machine in Taylorville, Illinois, to handle all the machinework and assembly. The NCP crew knew Dave was going with a Procision twin-turbo setup and would need to provide a hearty rotating assembly. They went with a Molnar crankshaft, Molnar rods, 10.1 RaceTec pistons, and Liberty Performance heads. Shaun Atteridge came up with a custom grind for the Liberty Performance camshaft that plays perfectly with the assigned power adders.

The engine bay and engine consist of all-black components, including Eddie Motorsports valve covers, a black intake tube, and accompanying black Eddie Motorsports hood hinges that promote the engine's mischievous behavior to the fullest.

Once boxed up, the NCP gang bolted on a FiTech Ultra Ram intake with 102mm throttle body and a duo of Precision Turbos 76mm mirror image turbos. FiTech Go Spark ignition and Multi Fire plug wires light the fire while the turmoil exits through a set of Ultimate headers and custom 4-inch exhaust that dumps just ahead of the front tires.

Power travels through a Hughes Performance 4L80E transmission and Hughes 3,000-stall converter and takes orders from a B&M shifter. That anarchy continues to a QA1 carbon-fiber driveshaft and onto a Strange Engineering Ultra Fab 9-inch rearend outfitted with an Eaton limited-slip differential, 3.70 gears, and Strange 35-spline axles–a bombproof combination built to handle every bit of the 1,500 hp exuded by the turbocharged mill.

ARIZONA
US
66
THE MOTHER ROAD
ROUTE 66
RED CROWN GASOLINE
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KICKER
KICKER

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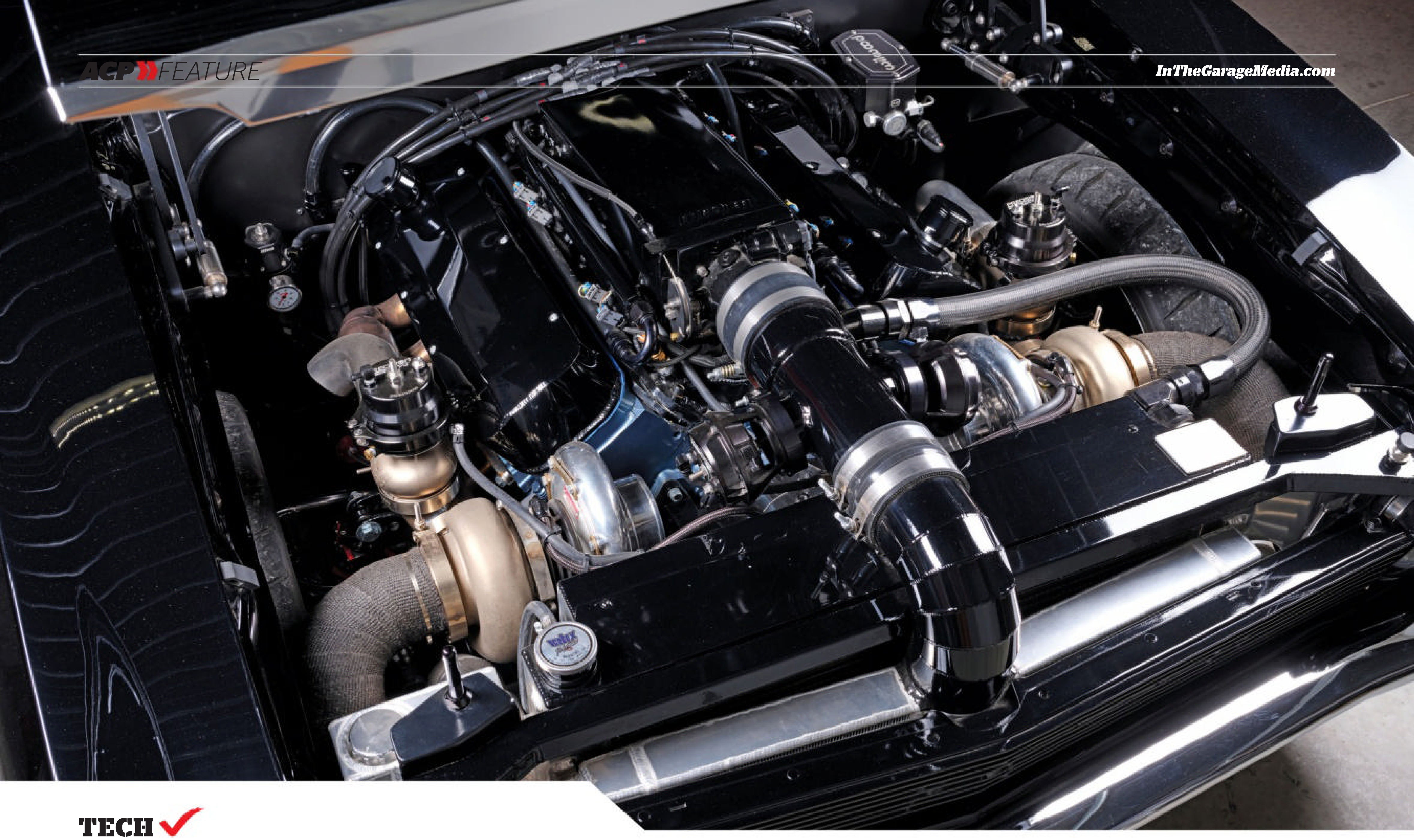

TECH ✓

OWNERS: Dave & Andrea Timm
VEHICLE: '68 Chevy Nova

Engine

TYPE: Merlin IV big-block
DISPLACEMENT: 565 ci
BORE: 4.600
STROKE: 4.250
CYLINDER HEADS: Liberty Performance Components 340cc, 124cc chambers, 2.250 intake, and 1.880 exhaust valves
ROTATING ASSEMBLY: Molnar 4340 crank, Molnar 6.535-inch rods, RaceTec 10.1 pistons, Liberty rings
CAMSHAFT: Liberty Performance, Shaun Atteridge custom grind–248/250 at 0.50 duration, 0.651 lift intake and exhaust, 115 LSA
INDUCTION: FiTech Ultra Ram intake, 102mm throttle body
POWER ADDER: Twin Procision 76mm Mirror Image Turbos
ASSEMBLY AND MACHINE WORK: NCP Speed and Machine (Taylorville, IL) by Heath Clayton, Greg Clayton, Kevin Clemence, and Kenny Miller
EXHAUST: Ultimate Headers, custom 4-inch exhaust, custom tips
ANCILLARIES: Custom Icebox Performance aluminum radiator and core support with intercooler, dual SPAL fans, Powermaster alternator, Pro Form electric water pump, XK Glow Lighting
OUTPUT ESTIMATED: 1,500 hp at 6,500 rpm

Drivetrain

TRANSMISSION: Hughes Performance 4L80E
TORQUE CONVERTER: Hughes Performance 3,000 stall
DRIVESHAFT: QA1 carbon fiber
REAR AXLE: Strange Engineering Ultra Fab 9-inch rearend, Eaton Truetrac limited-slip differential, 3.70 gearset, Strange 35-spline axles

Chassis & Suspension

FRONT SUSPENSION: Heidts subframe with upper and lower tubular control arms, QA1 MOD coilover shocks, Heidts splined sway bar, Flaming River manual rack-and-pinion steering
REAR SUSPENSION: Heidts four-link rearend, QA1 MOD coilover shocks, Heidts Panhard bar and sway bar
BRAKES: Wilwood 13-inch rotors, four-piston calipers front and rear, Wilwood Tandem master cylinder, Wilwood proportioning valve

Wheels & Tires

WHEELS: U.S. Wheels Rat Rod Series (18x10 front, 20x12 rear)
TIRES: Toyo R888 with Diamond Back Classic Blue Lines; 295/30R18 front, 325/25R20 rear

Interior

UPHOLSTERY: TMI black vinyl with blue stitching
CARPET: TMI blue loop
INSTALLATION: Timm Built Customs
SEATS: TMI buckets front and bench rear
DOOR PANELS: TMI
CONSOLE: Custom by Timm Built Customs
STEERING: Flaming River steering column, Eddie Motorsports steering wheel
SHIFTER: B&M
DASH: TMI
GAUGES: The One Gauge
PEDALS: Lokar
ENTERTAINMENT SYSTEM: Kicker KMC4 head unit, Kicker KXMA 800.4 amplifiers (2), Kicker 6.5-inch door speakers, Kicker 8-inch mid-bass door speakers, Kicker 8-inch subs (4) installed by Timm Built
WIRING: American Autowire by Timm Built

Exterior

BODYWORK AND PAINT: Brian Diveley
PAINT: Glasurit Black
HOOD: Auto Metal Direct steel 4-inch cowl
BODY MODS: Shaved rear quarter marker lights, Detroit Speed mini-tubs by Timm Built
FRONT BUMPER: AMD
REAR BUMPER: AMD
HEADLIGHTS: XK Glow
TAILLIGHTS: Stock with XK Glow LED
SIDE MIRRORS: Classic Industries
DOOR HANDLES: Eddie Motorsports

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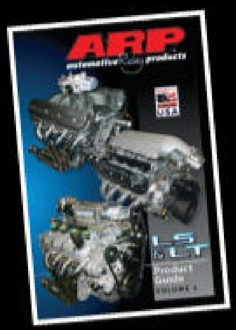

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Dave wasn't shy when it came to bringing on an aggressive stance and handling ability. His research led him to Heidts for one of their front subframes complete with 2-inch dropped spindles and tubular upper and lower control arms. QA1 MOD coilover shocks provide dampening duties and a Heidts splined sway bar keeps body roll in check. Out back resides a Heidts four-link with QA1 coilovers and Heidts sway bar and Panhard bar.

Dave burned in a set of Detroit Speed mini-tubs to provide ample acreage for the massive 20-inch gloss black U.S. Wheels Rat Rod Series rollers and 325/25R20 Toyo rubber decorated with Diamond Back Classic Blue Lines. Up front a set of 18-inchers and Toyo 295/30R18 R888 rubber went in with less fuss yet maintains grip and the look Dave was after. This unique wheel and tire combination gives the Nova an uncommon appearance compared to the general population of Pro Touring street machines on the road today–it was all part of the plan.

Adhering to a mainstream approach to braking, Dave went with a set of Wilwood binders on all four corners combined with a Wilwood tandem booster and proportion valve. It's a tried-and-true recipe capable of harnessing the Nova's brute strength.

To coincide with the car's overall black and blue performance theme, Dave's search for a suitable interior started and stopped at TMI. The black with blue stitching bucket seats, door panels, custom center console, and dash follow suit. Dave broke up the black with blue loop carpet, also from TMI. The dash features a fully customizable OneGauge LCD screen, and the custom-built center console houses the Kicker KMC4 head unit just above the XK Glow lighting controller. Dave stashed the FiTech Ultra Ram and Go Shift controllers in the glovebox for a cleaner scene. The sound system continues with Kicker amps, mid-bass door-mounted speakers, and four 8-inch subs parked in the trunk. It's enough bottom end to announce the Nova's presence from a distance.

The big reveal is the exterior of this ominous black muscle machine. Beyond the bulbus 4-inch Auto Metal Direct hood, it's got the personality of a stealth bomber with chrome accents and wheelcaps providing a scant bit of life beyond the Glasurit Black paint superbly applied by Brian Diveley. Diveley's stellar pre-paint bodywork ritual presents a flawless canvas designed to show off the immaculate, ripple-free finish that launches the Nova into show-car territory.

The 10-month saga had some snags here and there, including Dave having a bout with COVID-19, which laid him up for two weeks. The deadline for SEMA 2021 was fast approaching, yet Dave refrained from panic. "I got the engine late one morning and needed it installed later the same afternoon," Dave tells. "Thanks to the brute strength of my wife, sporting flip-flops (not recommended), she was still able to push the cherry picker in position so I could lower the engine and bolt it in." Dave credits Andrea's participation in other areas as a huge help in getting the car done on time. Also, on the "thank you" list is Kevin Diveley, Jerry Howard, and Brian Diveley, as they all stepped in and went out of their way when Dave needed them most.

Dave has learned a lot since the days of wrenching on the old Dodge Neon, and the quality and style of his Nova speaks volumes for how far he's come in the muscle car building world. At this point he still works a full-time gig with the sheriff's department and still finds time to work on the Nova and customer cars on the side. The day will come when Dave retires from his day job, and there is no doubt Timm Built Customs will be turning out many more SEMA-bound muscle cars in the future. ACP

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MY FIRST 383

PART 1: THE SHORT-BLOCK

WHAT TO KNOW WHEN TURNING A CHEVY 350 INTO A STROKER WITH OFF-THE-SHELF PARTS

BY **TAYLOR KEMPKES** PHOTOGRAPHY BY **THE AUTHOR**

In a world of twin-turbo LSX engines making upwards of 1,200 hp, we might come across as a bit antiquated—who's even building small-block Chevys anymore? Scrolling through Instagram and catching up on the latest SEMA builds, you'd be forgiven for forgetting the good ol' 383ci Chevy. But scroll through your favorite online hot rod parts store like Speedway Motors and you quickly realize the humble small-block is far from dead. With the wide variety of complete rotating assemblies, top-end kits, and engine dress-up kits available on SpeedwayMotors.com, it's never been easier to build your own stroker engine at home.

To get the ball rolling, we sourced a used small-block 350 with four-bolt mains that someone was getting rid of on OfferUp for a couple hundred bucks. While we've heard that a two-bolt main block is just fine for a mild 400- to 500hp build, we wanted to do some future proofing. Plus, four-bolt main blocks aren't all that tough to come by. We also got lucky finding a block that had yet to be rebuilt, so we would only have to go 0.030 inch over when boring the cylinders.

With the foundation for our build in hand—er, on a stand—we got onto the fun part and started shopping for speed parts. Speedway Motors makes it way too easy with their array of 383 stroker rotating assemblies.

The first decision was whether we wanted a 5.7- or 6.0-inch rod. What's the difference? The longer 6.0-inch rod offers a less-aggressive angle compared to the shorter 5.7. This means, theoretically, less side load and thus less wear on the cylinder walls. The tradeoff is that the piston needs to be shorter to compensate. That results in the bottom oil ring land needing to be notched to fit the wristpin. This makes some engine builders nervous when it comes to long-term oil control, but we've never heard of it causing a real-world issue.

With the pros and cons weighed, we decided on the longer 6.0-inch rods. We also decided the standard kit with a cast crank, forged I-beam rods, and hypereutectic pistons would work well for us. The pistons are a flat-top design with two valve reliefs that when paired with a set of 64cc heads should give us a healthy 10.1 compression. Oh, and another neat service Speedway Motors provides is fully balancing your rotating assembly of choice for a few extra bucks before sending it out. We definitely opted for that one.

As for the machine work, we gave some thought to the DIY dingle ball hone and pray method but quickly decided to give our block to a professional. L & R Engine in Santa Fe Springs, California, has a history working with many industry friends, so we gave them a call. Shop foreman and second-generation engine machinist, Derek Ranney, answered the phone and said they'd be happy to help out.

We dropped the block off with Derek and his guys at L & R Engine, then caught back up with them later once they'd done most of the requisite cleaning, inspection, and basic machine work. Derek's son, Derek Jr., would be showing us the ropes and completing the final steps on our block to prep it for its stroked rotating assembly.

SOURCES

ARP
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arp-bolts.com

L & R ENGINE
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SPEEDWAY MOTORS
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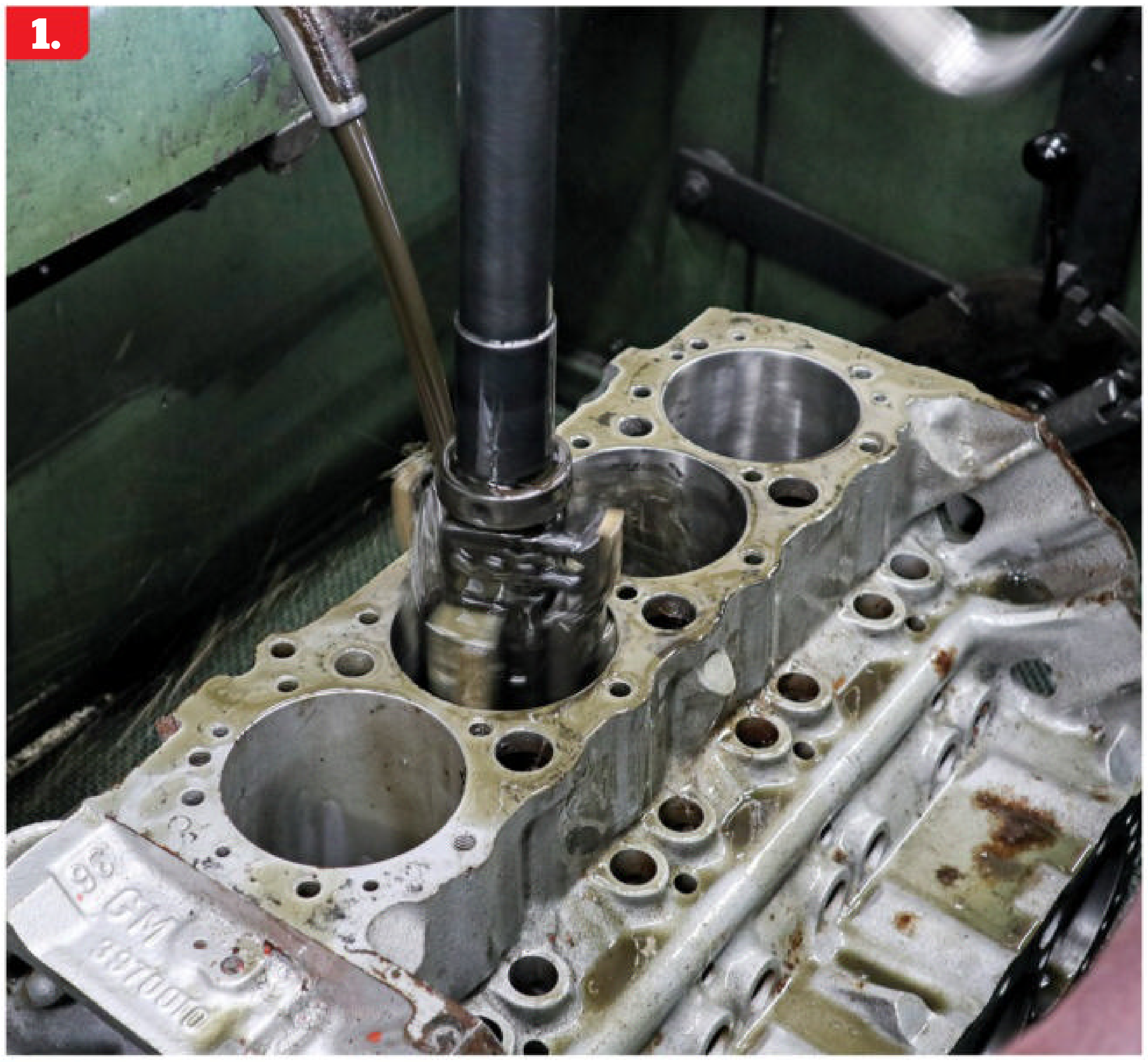
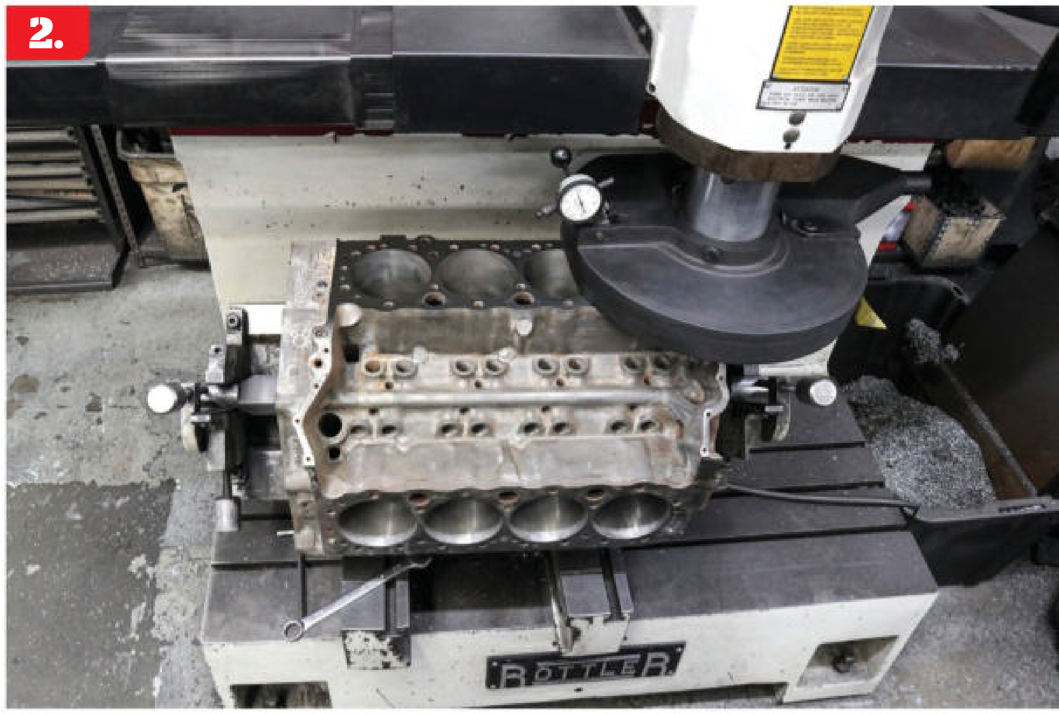
1.



1. After tearing the engine down to a bare block, they threw it in the hot tank to clean off all the grime. Next, they magnafluxed it to check for cracks before proceeding to the bore and hone.

2. The guys at L & R Engine also decked our block—another step that is not technically required but is generally a good idea. This makes sure the top of the block is perfectly square for optimum sealing against the cylinder heads. They even checked to see if our block needed a line hone (it didn't) and then went so far as to primer and paint it for us.

2.



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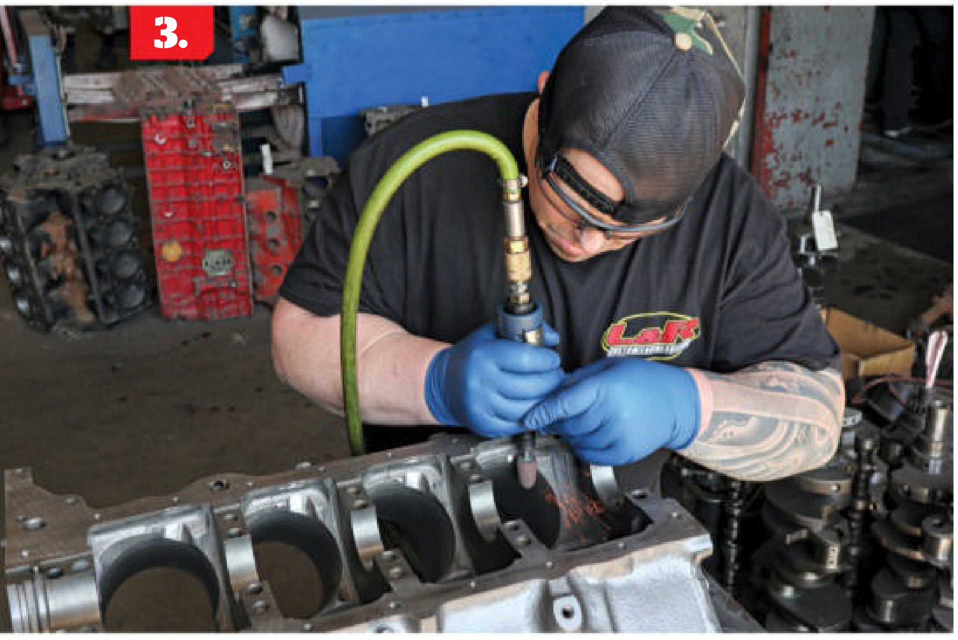


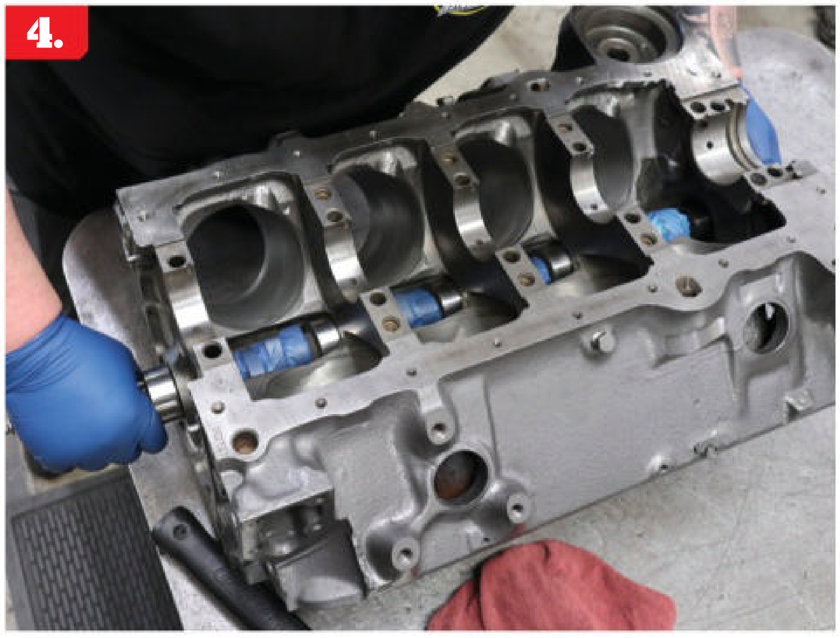
3. To use a 350 block with increased stroke, the main modification needed is notching the bottom of the cylinders for added rod clearance. More clearance is necessary for use with 6.0-inch rods compared to 5.7 rods and if you take off too much material you can hit a water jacket. Just let your machine shop know what rod you will be using (length and manufacturer) and they should know how much clearance is needed.

4. Some extra precautions the guys at L & R Engine like to take include deburring the bottom of the cylinders to avoid wearing on the pistons when they rock. They also chase all the head bolt threads and install a test camshaft after fitting the block with new cam bearings.

5. After a final bath in the hot tank and a good clearing out with compressed air, they installed the expansion plugs and sent us on our way.

6. With the engine back at the In The Garage Media Tech Center we got to work assembling the short-block, beginning with installing our ARP main studs and the 0.030-inch over main bearings provided by Speedway Motors.

4.



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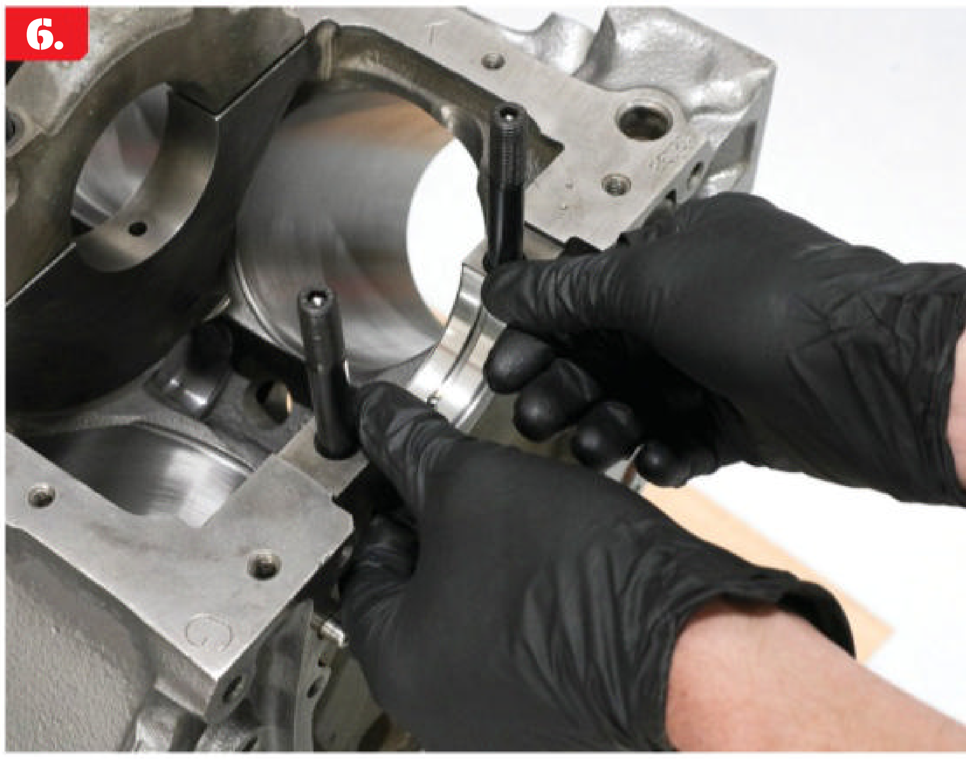

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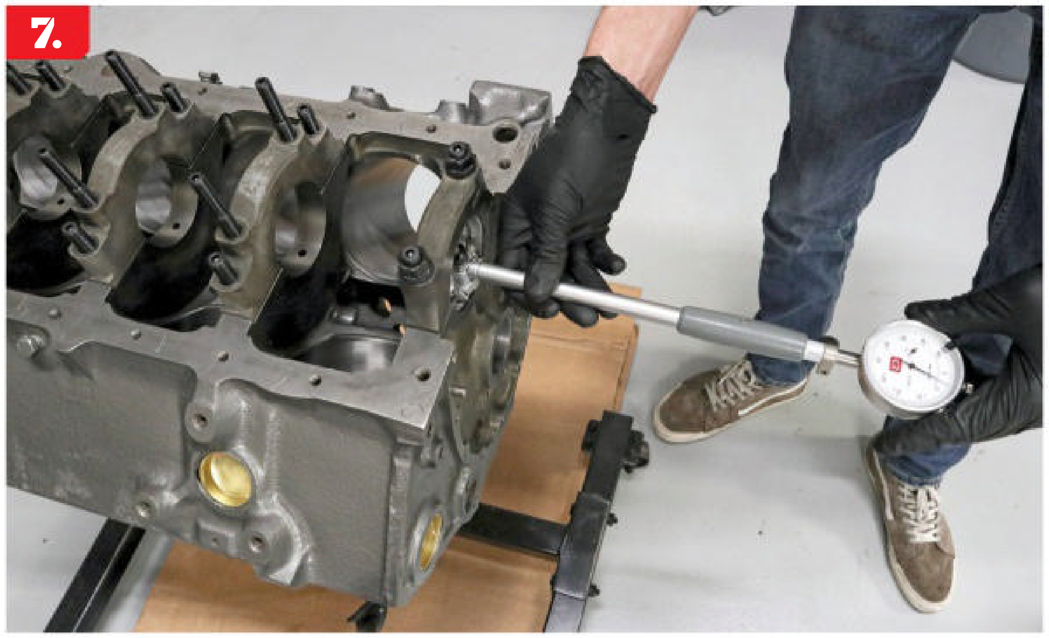

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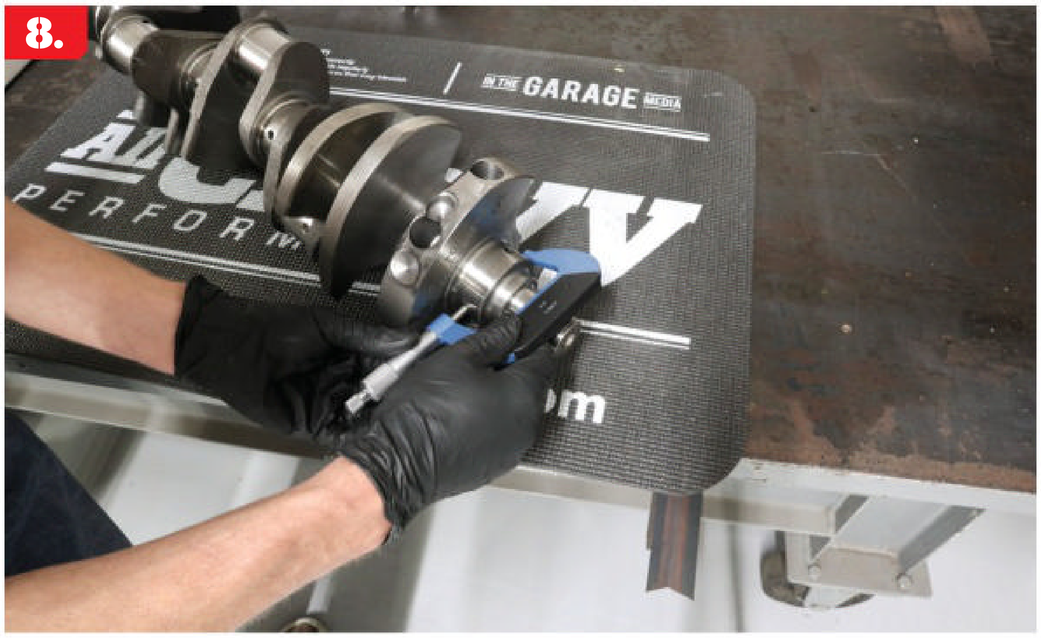

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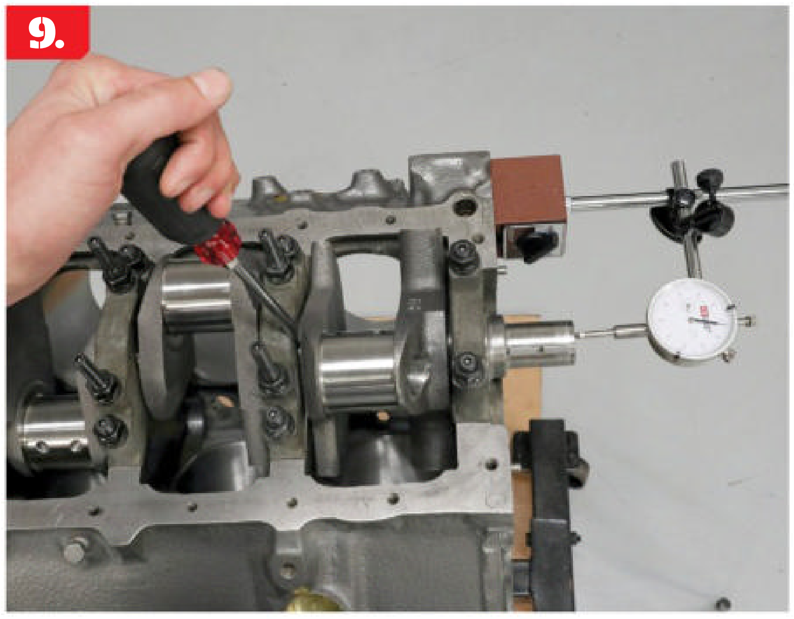

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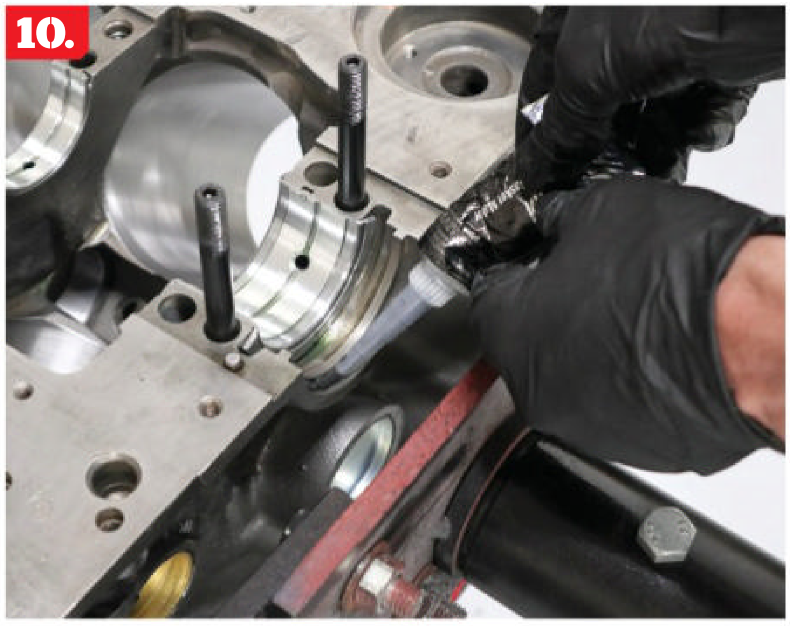

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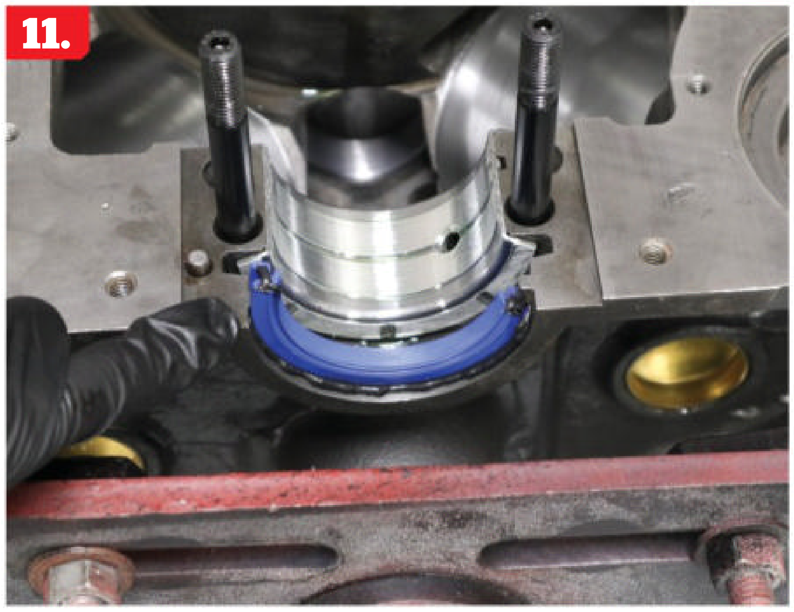

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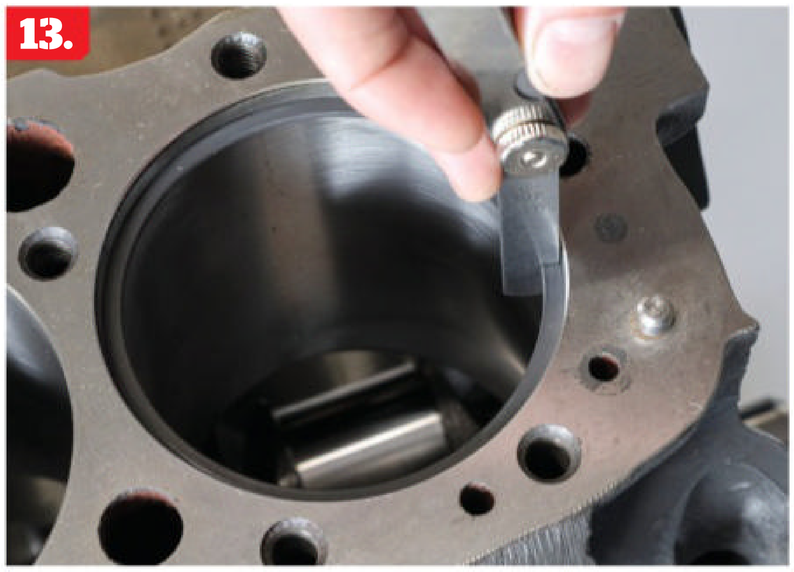

14.

7-8. We used a micrometer to measure the crankshaft journal diameter and, after torquing the first main cap to spec, a dial bore gauge to measure the bearing clearance. As it turned out, the bearings Speedway Motors provided with their rotating assembly were a perfect match.

9. The next clearance to verify was the crankshaft endplay. With the crank installed and main caps properly torqued using ARP Fastener Assembly Lubricant, we fitted a dial gauge on a magnetic base squared to the crankshaft snout. Then, we used a long screwdriver between one of the main caps and crankshaft blades to pry the crankshaft fore and then aft, noting the amount of lateral movement on the dial indicator.

10. With the crankshaft removed and briefly set aside, we proceeded to install the two-piece rear main seal using a light bead of black RTV on the backside of the upper and lower seal.

11. For even more confidence, we offset the ends of the seal and added a small dab of RTV to each end. Don't forget to add some oil on the inside lip of both main seal halves to help the crank spin freely.

12-13. Next, we set our sights on preparing the pistons to go in their respective homes. We started by verifying we had the proper ring endgap on the Speedway Pro Series plasma moly-coated rings (this high-tech coating has been proven to increase horsepower through reduced friction). To get the rings squared in the hole you can use one of your pistons, then a traditional feeler gauge set to measure endgap.

14. Then we installed the connecting rod bearings and double-checked the big end clearance using similar tools and techniques as we did for the main journals.

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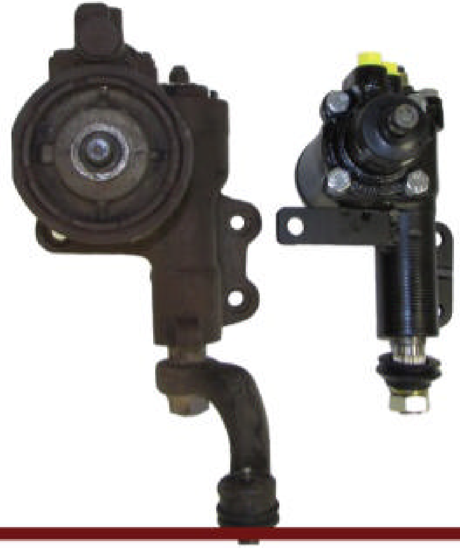

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15.

15. A benchtop vise was necessary for securing the rod while torquing the bolts to spec and measuring the bearing diameter.

16. Remember how we mentioned the piston pin eating into the oil ring land? Well, we didn't! We had to carefully remove the oil rings we'd already installed on the first piston in order to actually fit the piston to the rod—oops!

16.

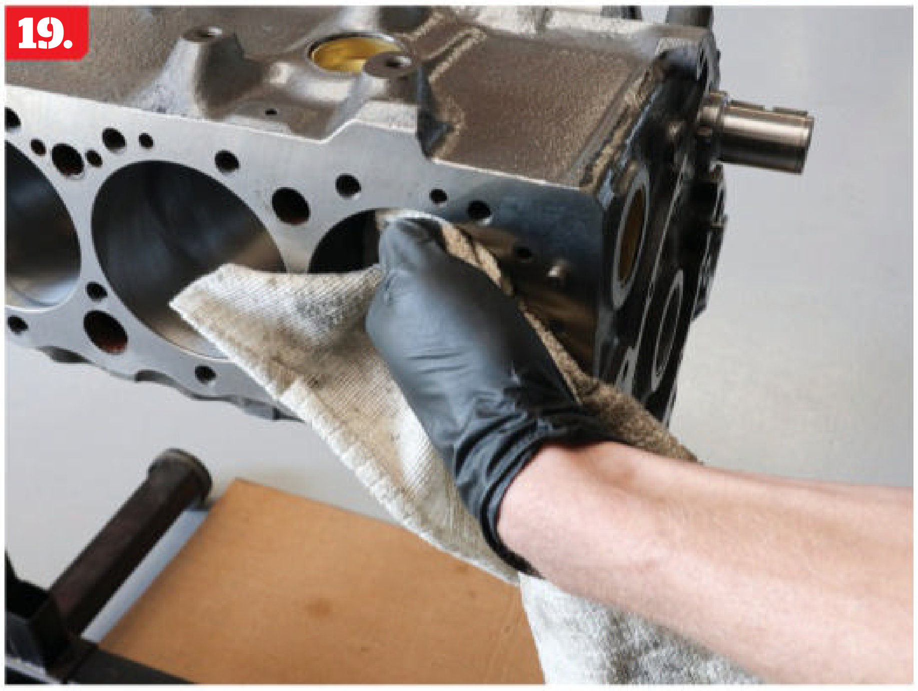
17.

17. With that mishap sorted out, we proceeded to coat the wrist-pins with engine assembly lube and install the rods on the pistons, securing them with the provided C-clips.

18. We installed the rings on the pistons, making sure to offset each ring endgap for proper sealing. If the ring has a dot or dimple present that side faces the top of the engine. If there's no marking, the chamfered side typically goes up.

18.

19.



19. After a final wipe down of each cylinder with a lint-free rag and some acetone, we coated the cylinder walls with a healthy dose of engine assembly lube. This protects the bare steel from forming any rust in case the engine sits for a while after being assembled.

20. It was finally time to send home the hypereutectic flat-top pistons. A billet piston installation tool sized for 4.030-inch pistons and a rubber mallet made this a step a breeze.

20.

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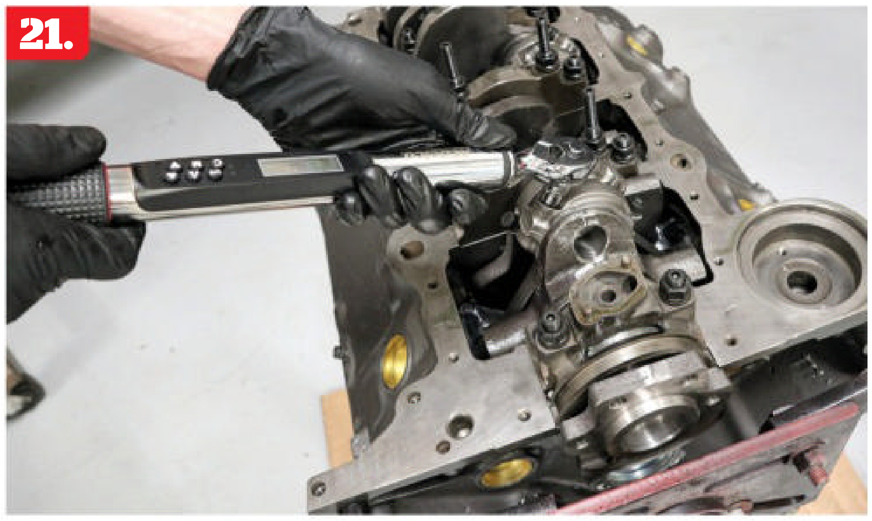
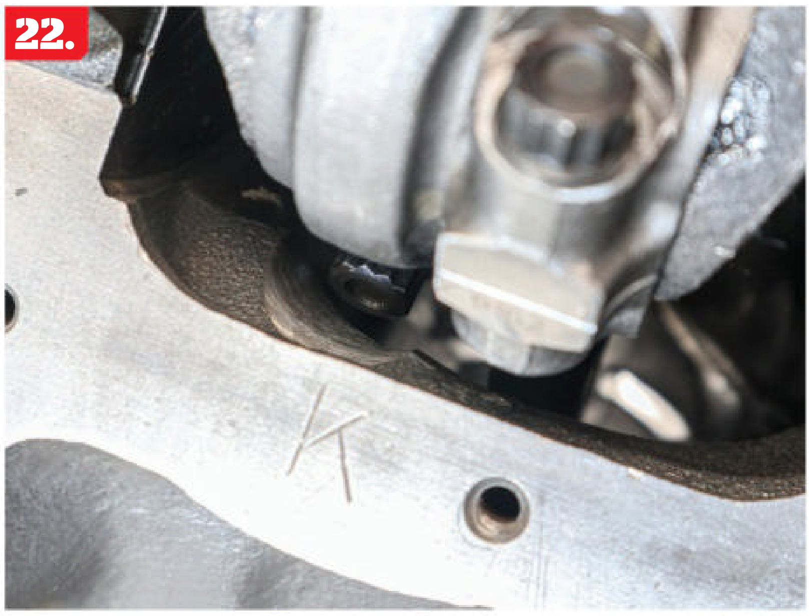


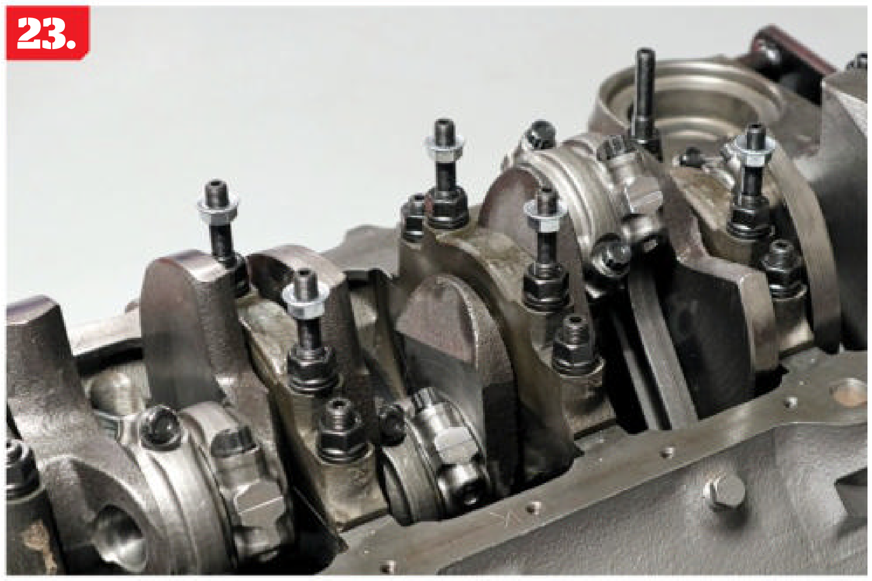
21. Then we installed the connecting rod caps. After torquing the bolts on each cap to spec, we made sure the rotating assembly still turned over freely.

22.



22. Check out that rod bolt clearance. Derek Jr. really nailed the block modifications to give us just enough room for our longer rods.

23.

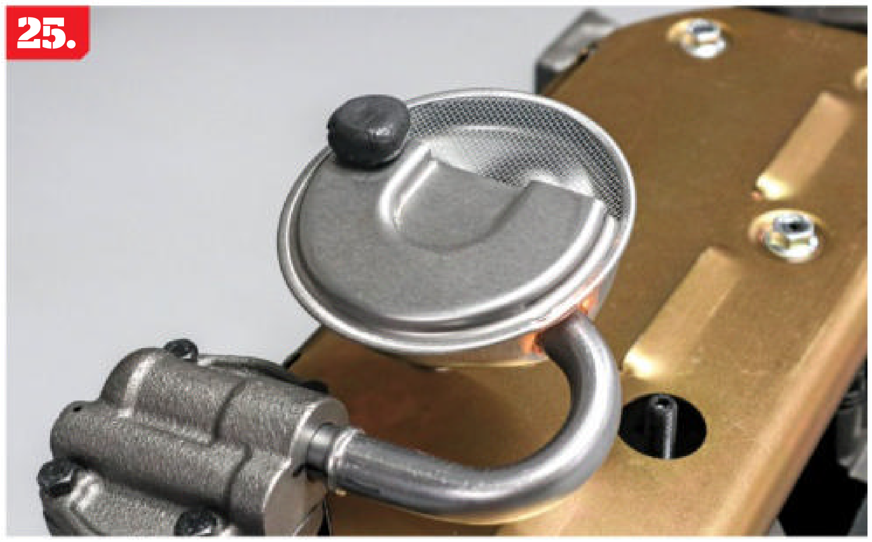


23. With the stroker rotating assembly installed in our small-block, we decided to finish off the lower portion of the engine by fitting our windage tray and Speedway Motors oil pump. We used the hardware provided with our ARP main stud kit to set the height of the tray.

24.

24. We fitted the other half of the oil pump shaft then dropped in the oil pump and windage tray together. With everything bolted down, we made sure to double-check our clearance when turning the engine over.

25.



25. To set our pickup angle, we began by lightly tapping the tube into the pump. Then we used a small piece of putty to check clearance between the bottom of our oil pan and the lowest point of the pickup (with our oil pan gasket installed, of course!).

26.

26. Using the flat end of a chisel, we proceeded to fully seat the pickup tube in the pump. Then, for a little extra peace of mind, we burned it in place with a little tack weld.

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THE WORLD'S FAIREST

THIS DAY TWO RESTO '65 CHEVELLE HAS LIVED ITS LIFE ON THE STREETS OF NEW YORK CITY

BY **SCOTTY LACHENAUER** ◼ PHOTOGRAPHY BY **THE AUTHOR**

Back in 1977 John Koch was 17 and working his way to purchasing his first car: a '69 GTO with a 400ci powerplant, 400 trans, and a pair of Hush Thrush mufflers that ended behind the driver seat. It sat high and level with the look and sound John wanted.

Scenes from *American Graffiti* were playing out daily on the streets of John's hometown of Whitestone Queens where kids cruised Francis Lewis Boulevard and raced stoplight to stoplight just for the thrill of it. The serious racers would head off to the connecting highway, a stretch of roadway that connected the Brooklyn-Queens Expressway to the Grand Central Parkway for quarter-mile showdowns. It was there that races for cash played out on a regular basis and spectators flocked to overpasses to check out the muscle car battles.

In 1978, John became friends with a guy named Bobby while he was working at a hardware store assembling bicycles. “Bobby had a ’64 Chevelle that he built from stray parts. He used interior bits from one car and a trans from another. He was the one who introduced me to the idea of building a car from the ground up,” John fondly says.

John sold off his GTO that year and grabbed up a car that was easier and cheaper to commute in. What he found was a ’65 Malibu SS with a straight-six. “It was what we would consider today as a ‘barn find.’ It was filthy and had a water leak in the back window, which gave it enough moisture to grow some errant pot plants between the console and seat,” John laughs. “For $150 I thought it had potential, so I bought it.”

Once cleaned up, John knew the car was a steal at that price. After a tune-up, it was dependable transportation for his new occupation as a NYC firefighter. “I was based in Brooklyn and the Chevelle got me to and from work for years,” John says. “The transmission finally gave out, and when I went to replace it I noticed it had an air-cooled trans with no cooling lines to the radiator. I thought that was pretty neat.”

Not much later, the rearend also went out. That’s when John realized the car needed to be upgraded. “Now was the time for a stronger powertrain, and I was ready for a V-8,” John says. By coincidence, he ran into his old pal Bobby who still had his Chevelle. John ended up buying Bobby’s Chevelle and pulling the fresh engine out of it for his Malibu.

Always wanting a four-speed, John bought an M21 for the Chevelle and installed it behind the potent small-block. By this time, he had retired the car from daily use, so a host of high-performance parts made their way to the Malibu. One upgrade was a 12-bolt posi-rear with 4.56 gears. It wasn’t the friendliest daily driver option, but he also added front disc brakes, which was a wise choice for a car driven on busy city streets.

In 2009, John retired from the fire department and found himself with plenty of free time to tackle a full restoration of the Chevelle. “I had acquired parts over the years and I wanted to build a Day Two car with that cool ’70s look,” John recalls. “A car you would drive during the week and tow to the track on weekends.”

The Chevelle was still in its original skin, so a fresh repaint in factory Mist Blue Metallic was needed, along with replacing some panels. Once finished, going with a big-block was the plan while keeping the 327 badges to give it a deceitful sleeper look.

CHEVROLET
Malibu SS
2090-QQ
NY WORLD'S FAIR 64

This Chevelle, like his old GTO, sits high and level—just how John prefers. To get that height, Eaton 2-inch over big-block springs were installed. The front bumper was tossed in favor of tow tabs and a little weight reduction. After initially running a set of steelies out back with American Torq Thrusts up front, Weld Prostar wheels now reside on all four corners. The rears are shod in Mickey Thompson 275/60R15 Drag Radials while shaved BFGoodrich T/A radials, sized 225/70R15, ride up front.

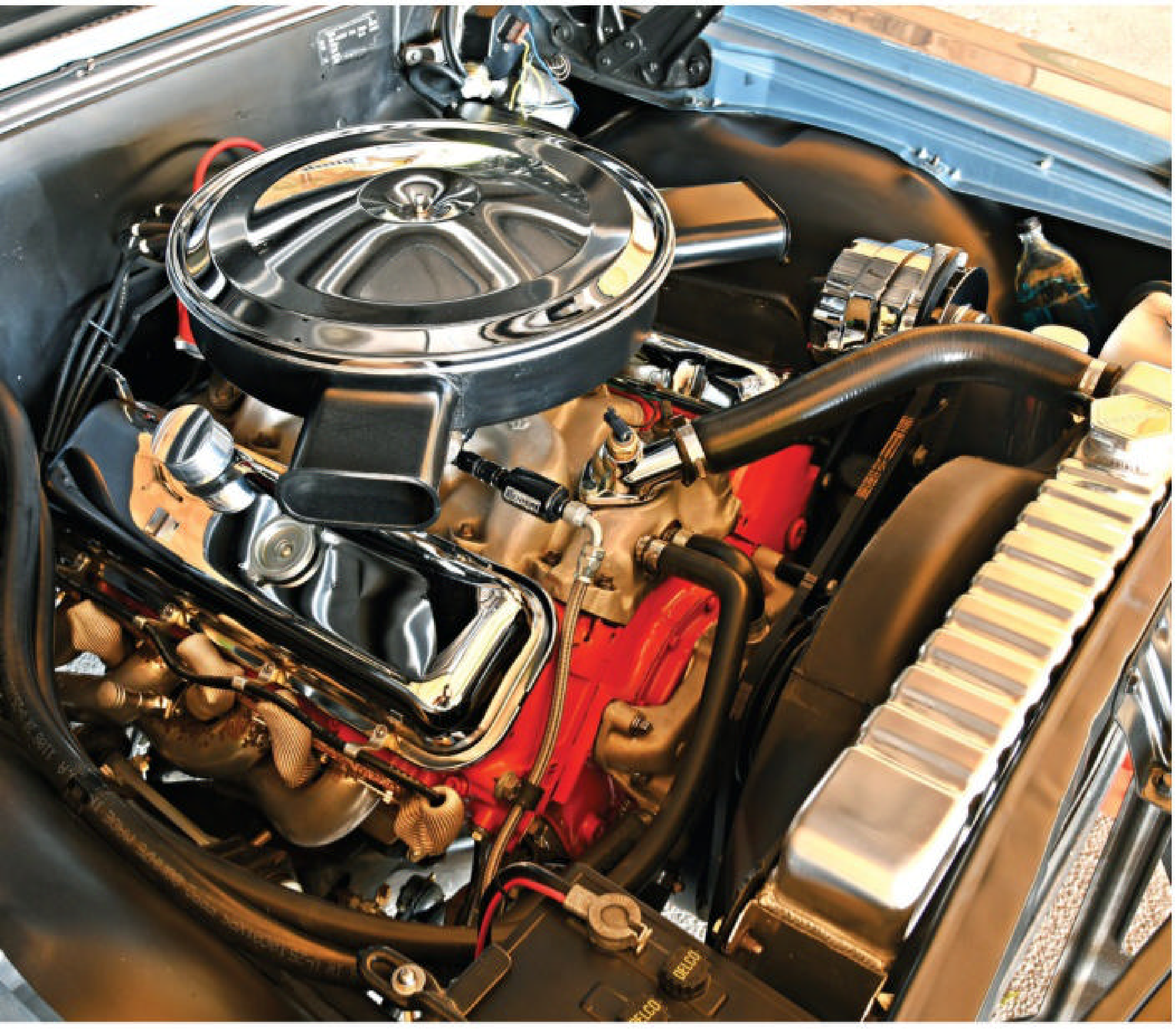
John's Chevelle has retained much of its OEM look, as it now boasts its original SS gauge package. "In 1965, if you ordered a clock and a tach the clock was mounted on top of the dash. I was able to procure both and installed them back in their factory locations," John says proudly. The Chevelle also has an original tilt column that was remanufactured by Ground Up Restorations and mounted with the car's original steering wheel. The console was found at a swap meet and was re-chromed, while a Hurst shifter (with a '65 Chevy handle) now shifts this ride through the gears. The upholstery is all new and features the original two-tone style found on this particular Chevy. For motivation, John dialed in a '70s 454, four-bolt main, steel crank, and TRW pistons. The heads and "snowflake" intake are from a '66 427ci engine. A Comp Cams roller camshaft with roller rockers and solid lifters give this engine plenty of thump where it counts. A Holley 850-cfm Double Pumper and repop Z-16 air cleaner feed this ride the fuel and air combo necessary to pound the local New York City streets.

For improved driveability, he replaced the M21 with a Super T10 transmission, and the 4.56 gears were swapped with a set of 3.73s. The ladder bars were removed and the control arms are now boxed for better handling. He also removed the wiring harness from the firewall and hid as much wiring as possible for a cleaner look.

The 1964 World Fair connection is a strong one with John as he lived less than 10 minutes from the fairground and has fond memories going to it as a kid. The '65 Chevrolet models would have been on display at the time. In New York State you are allowed to register historic cars with plates original to that year, so John sought out a rear 1964 World's Fair license plate, going as far as finding a "Q" plate, which meant you lived in Queens, which he did. He also found a souvenir "Unisphere" plate that he used on the front prior to removing the front bumper.

Today, John is constantly putting this raucous big-block Chevy through the paces. "My favorite part about driving to shows is meeting people who have different ideas on how to set up their cars," John notes. "It's all about getting together with new and old friends who have a common interest.

Over 40 years later I am still driving my Chevelle. Although I now live in Long Island, I still travel back to Queens on Saturday nights when the weather is nice to meet with my muscle car friends. Many are the same people I cruised the boulevard with in the late '70s." ACP



TECH ✓

OWNER: John Koch, Long Island, New York
VEHICLE: '65 Chevrolet Chevelle Malibu SS

NEW YORK
ELIMINATOR
NATIONAL SPEEDWAY

Engine
TYPE: Chevrolet big-block
BLOCK: '70s Chevrolet Hi-Perf Passenger
DISPLACEMENT: 454 ci
COMPRESSION RATIO: 10:1
BORE: 4.280
STROKE: 4.370
CYLINDER HEADS: Chevrolet '66 427
ROTATING ASSEMBLY: Forged steel crankshaft, Forged TRW pistons, four-bolt mains
VALVETRAIN: Solid lifters with roller rockers, Manley 219/188 valves
CAMSHAFT: Comp Cams 575/580 lift, 240/244 duration
INDUCTION: Holley 850 Double Pumper carburetor
IGNITION: MSD 6AL
EXHAUST: Hooker headers, Flowmaster exhaust with cutouts
INTAKE: '66 427 snowflake intake manifold
OUTPUT (at crank): 550 hp

Drivetrain
TRANSMISSION: Super T10
REAR AXLE: Chevy 12-bolt, 3.73 gears

Chassis
FRONT SUSPENSION: Eaton Springs 2 inches over stock, oversized sway bar
REAR SUSPENSION: Eaton springs 1 inch over stock, boxed control arms, sway bar
BRAKES: Wilwood four-piston calipers front and rear

Wheels & Tires
WHEELS: Weld ProStar
TIRES: Mickey Thompson Drag radials 275/60R15 rear, 225/70R15 BFGoodrich Radial TA, shaved sidewalls

Interior
UPHOLSTERY: Stock
MATERIAL: Two-tone blue vinyl
SEATS: Stock
STEERING: Stock tilt column, stock steering wheel
SHIFTER: Hurst with stock '65 Chevy handle
DASH: Factory tach, speedo, oil press, amp, and water temp gauges; dash-mounted stock clock; Sun water temp gauge underdash
AUDIO: Factory radio
HVAC: None

2090-QQ
NY WORLD'S FAIR 64

Exterior
PAINT: PPG Mist Blue Metallic
HOOD: Stock
GRILLE: Stock
BUMPERS: Front delete, rear stock

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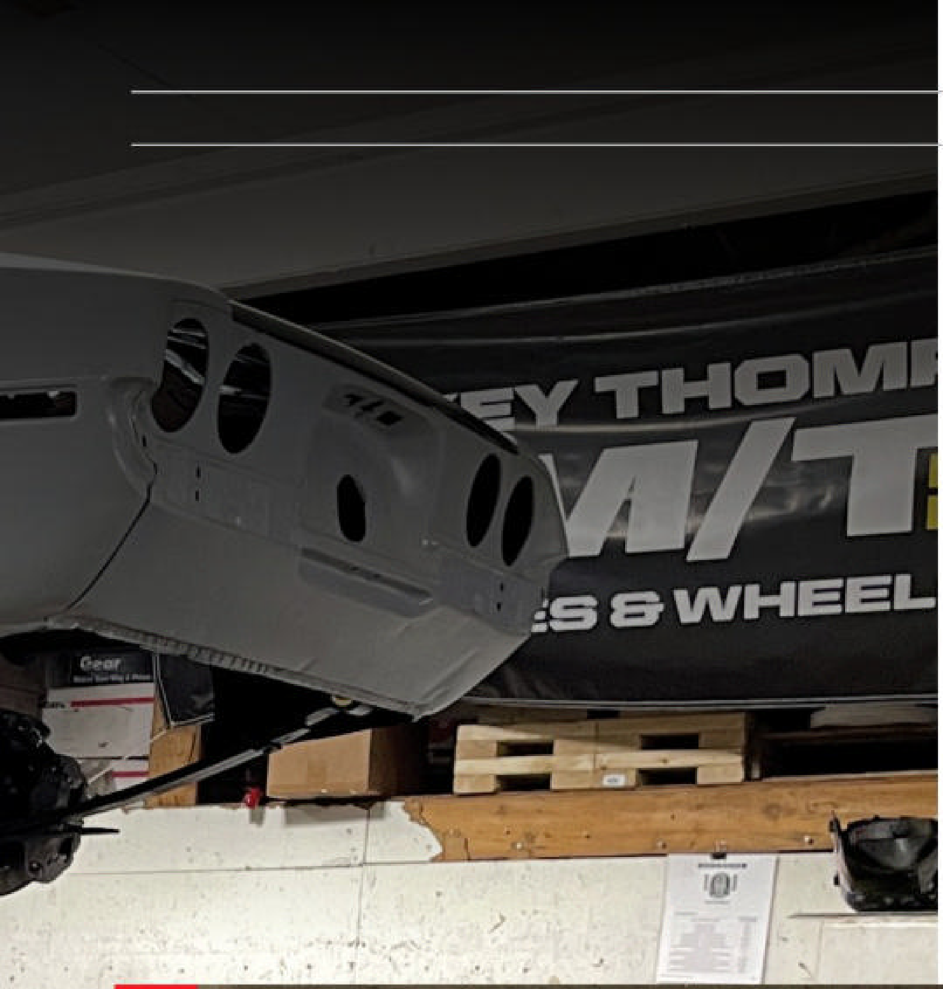
UPDATING A SECOND-GEN CAMARO FUEL SYSTEM FOR LS POWER



BY **CHUCK VRANAS** ◣ PHOTOGRAPHY BY **THE AUTHOR**

Pushing fuel is serious business. Regardless of whether you're feeding a stock mill or looking to install a hopped-up LS packed with plenty of go-fast goods to make it breathe fire, having the right fuel system to handle the job is of the utmost importance. If you plan on running carburetion or fuel injection enhanced by turbos or a supercharger, it will add even more demands to the delivery process. It takes careful planning to supply the perfect balance of fuel to meet the needs of today's high-performance engines, with each application having specific needs to reach its goals.

During a recent visit to Procision Industries in Taunton, Massachusetts, we met with shop owner Pat O'Brien who had recently wrapped up outfitting a fresh 5.3L LC9 LS for installation into his '71 Camaro project car. With the engine sporting aluminum heads by C3 Automotive Machine, Stage II LS1 cam from Brian Tooley Racing, and an LS Classic Series by Lokar Classic 14-inch intake kit, incorporating a Holley single-plane EFI LS intake with matching fuel rails along with factory GM fuel injectors and Granatelli Motor Sports 103mm throttle body, it was a perfect opportunity for *All Chevy Performance* to follow along as O'Brien began mapping out a plan.

Starting in the engine bay, O'Brien first determined the need for specific fittings, fuel line type and length, and line clamps while moving rearward to decide on a regulator, fuel filter, fuel pump, and tank options. With many of the system parts available in kit form or individually, it's easy to build to your custom application needs to handle a specific type of fuel delivery.

To illustrate the updating of a stock fuel tank to handle the EFI requirements of a modern LS, O'Brien contacted Summit Racing for one of their stock-replacement 20½-gallon steel fuel tanks. From there, Summit offers a perfect retrofit kit from Tanks Inc. with their PA-Series in-tank fuel pumps used to incorporate an internal fuel pump into an original gas tank. The EFI Tank Conversion Module kit comes complete, including a reservoir tray to eliminate fuel pump starvation, which is possible in non-baffled tanks, and a Walbro high-performance, high-flow fuel pump rated for up to 630 hp at 60 psi (ideal for this application with higher horsepower applications available). An OER fuel tank sending unit from Summit completed the tank build.

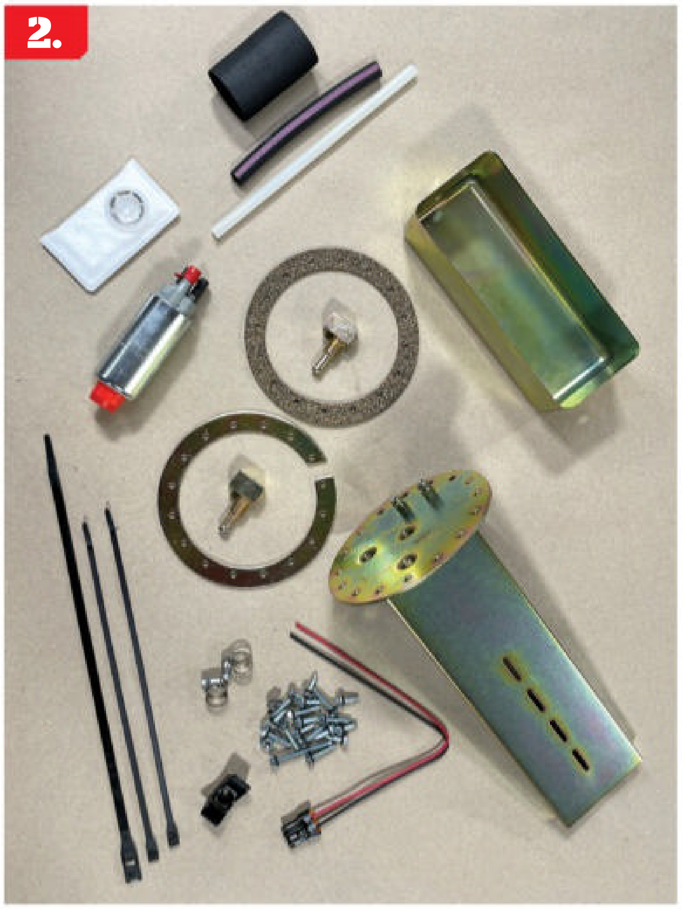
It's important to note that a properly installed internal fuel pump will get rid of common issues often experienced with external fuel pumps, such as vapor lock and cavitation. Rounding out the system, Summit Racing supplied one of their Universal LS Fuel Filter/Regulator kits incorporating a Corvette-style, 58-psi rated fuel filter/regulator along with -6AN fittings.

Let's follow along to check out in detail how the system is installed on this second-gen Camaro. ACP

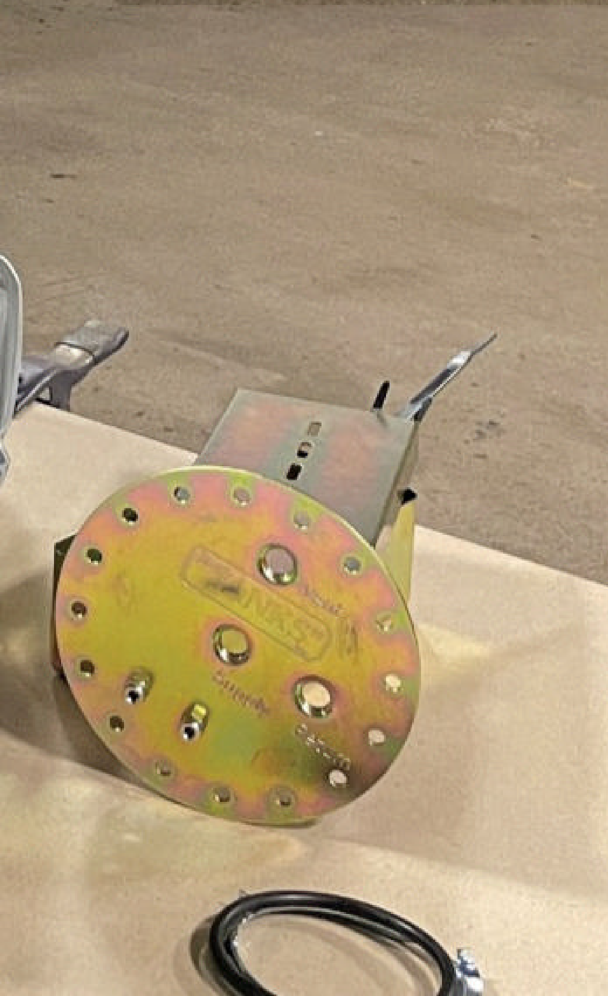
1.

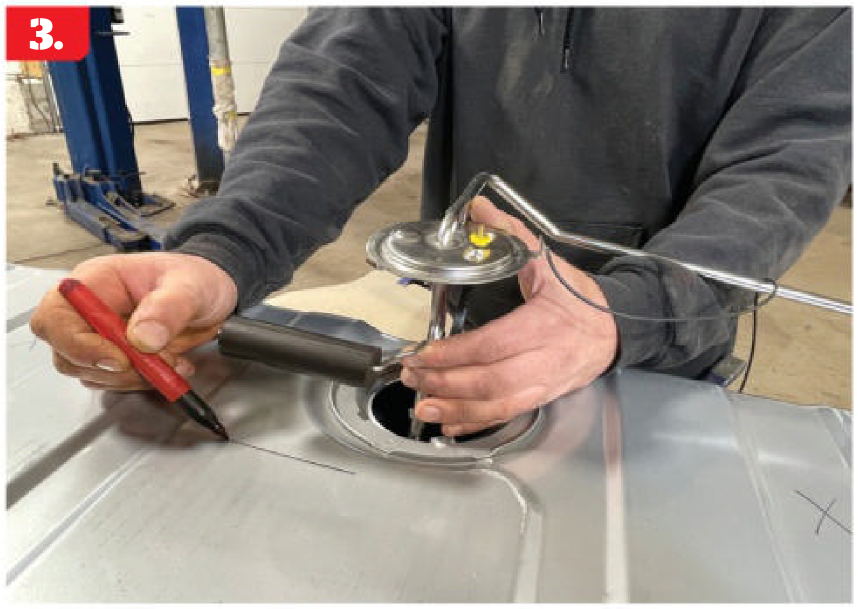
1. For a fresh start, the 20½-gallon steel fuel tank with silver powdercoating from Summit Racing was selected to act as the base for the new fuel system on the second-gen Camaro.

2.



2. Summit Racing supplied the Tanks Inc. PA-Series in-tank fuel pump system to retrofit an internal fuel pump into a factory-style fuel tank. The EFI tank conversion module comes complete, as pictured, including reservoir tray and support arm, Walbro high-performance fuel pump, in-tank wiring harness, and all related installation hardware.



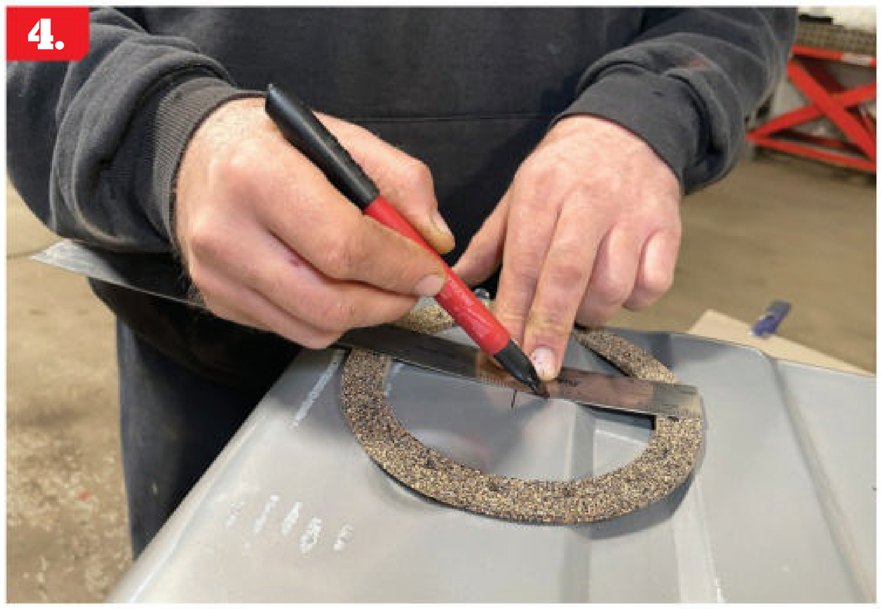


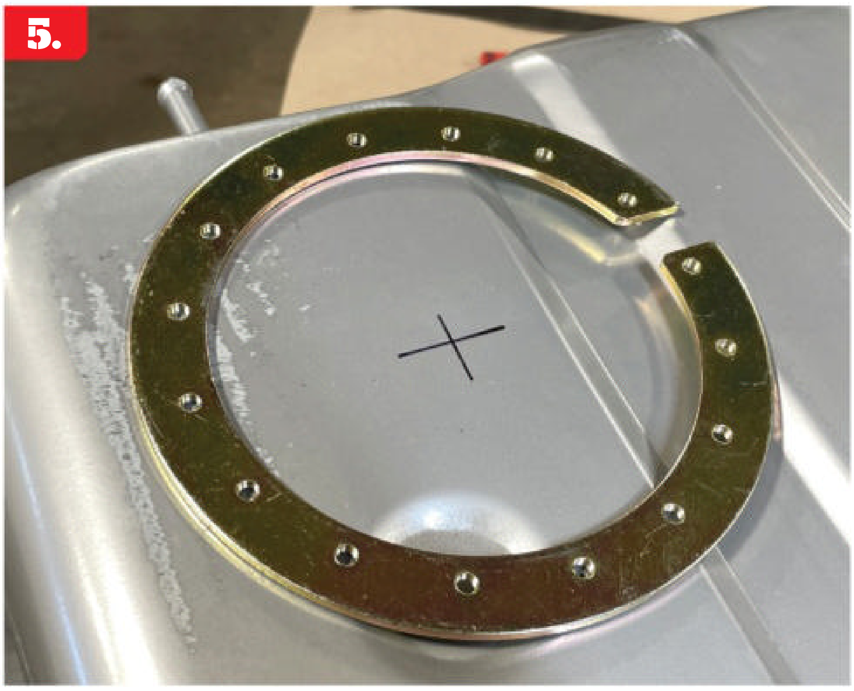
3. To prepare for installation of the in-tank fuel pump system, Pat O'Brien of Procision Industries reviewed the tank exterior for the best placement of the unit by test-fitting the OER tank sending unit with float first, followed by checking for any internal baffles.

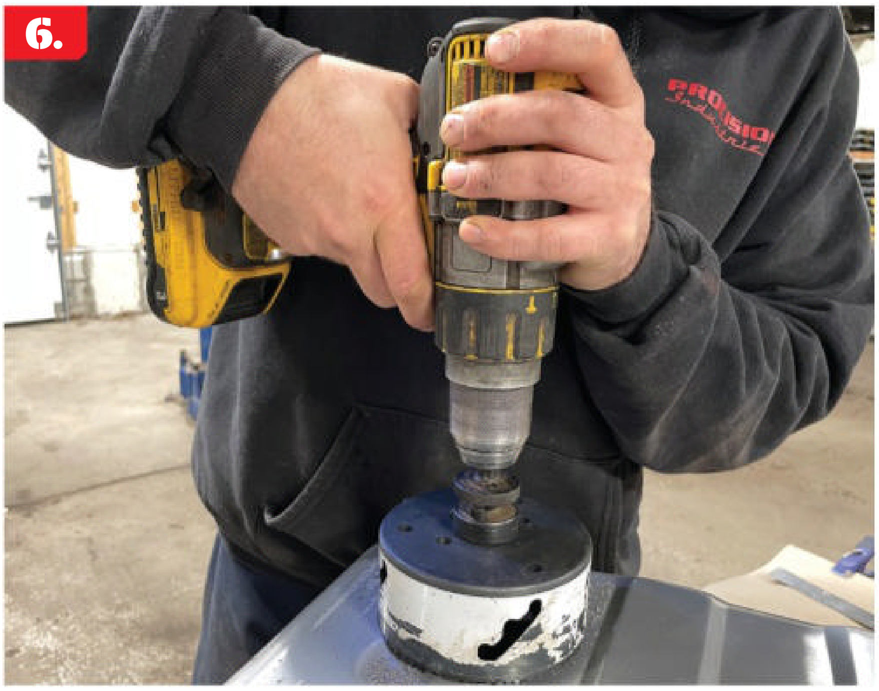
4. Once the installation area was selected, O'Brien used the retainer ring gasket as a guide for the mounting plate. Using a marker, he then set the center point for the required 4½-inch-diameter mounting hole.

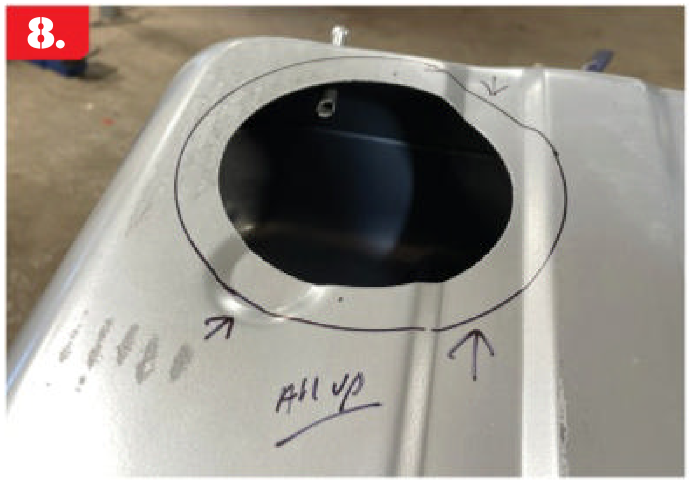
5. Placement of the slotted retainer ring atop the tank further illustrates the installation area. Note that there is a 6-inch-diameter flat spot needed for the system mounting plate and any ribbed areas of the tank will require flattening.

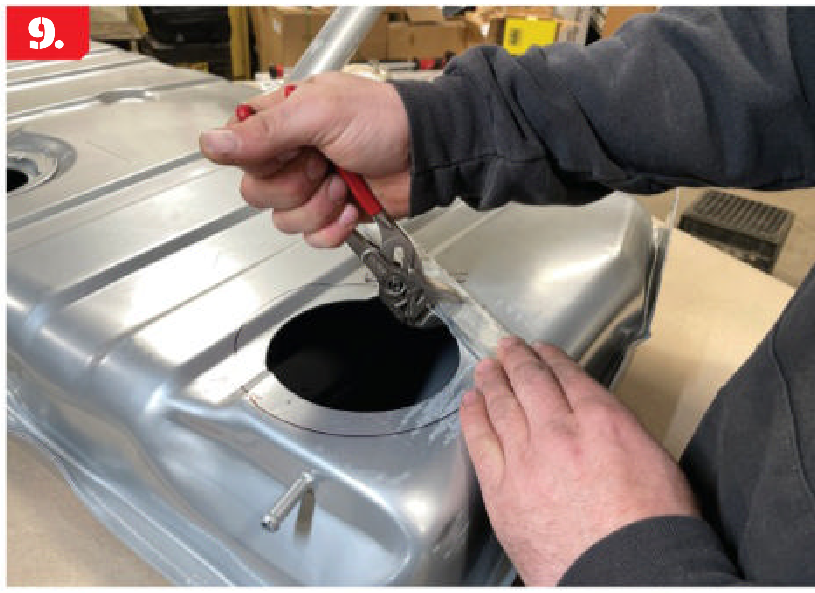
6. While wearing safety glasses, a $^{1}/_{8}$-inch pilot hole was drilled first followed by a ¼-inch hole. O'Brien then used a 4½-inch holesaw to finalize the opening to the tank.











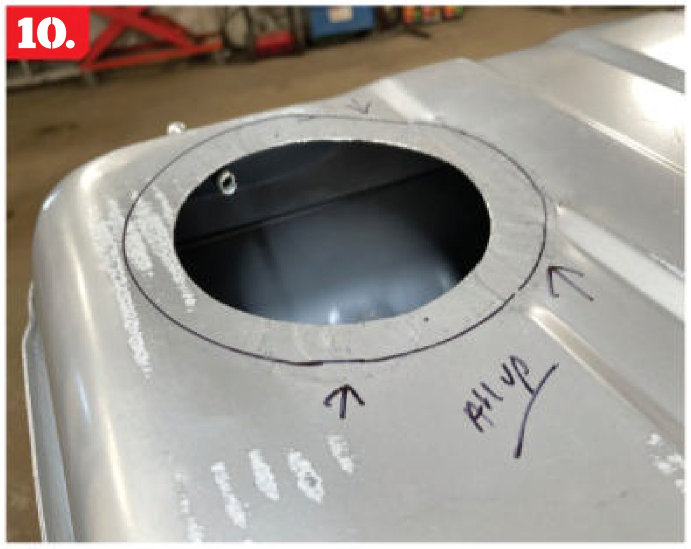
7. After completing the opening, a combination file was used to deburr the area, removing any sharp edges.

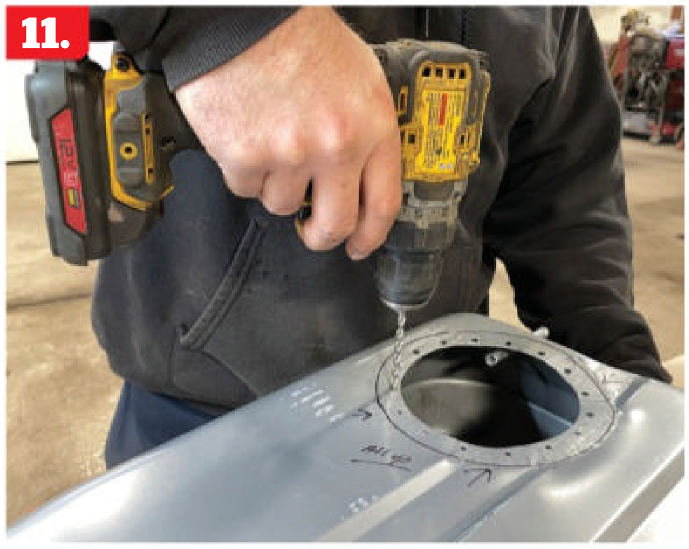
8. The slotted retainer ring was then used to trace a 6-inch diameter, illustrating the areas on the tank that will need flattening.

9. Using a combination of flat-jaw pliers and a piece of aluminum flat stock as well as standard pliers, the ribbed areas were gradually flattened out.

10. With the ribbed areas addressed, the top area of the tank is now ready for the next step.

11. The slotted retainer ring was centered and secured in place using clamps on the tank followed by a punch used to mark the 16 mounting screw locations. A $^{3}/_{16}$-inch bit was then used to drill the holes. Finally, the tank was vacuumed and blown clean of any debris.





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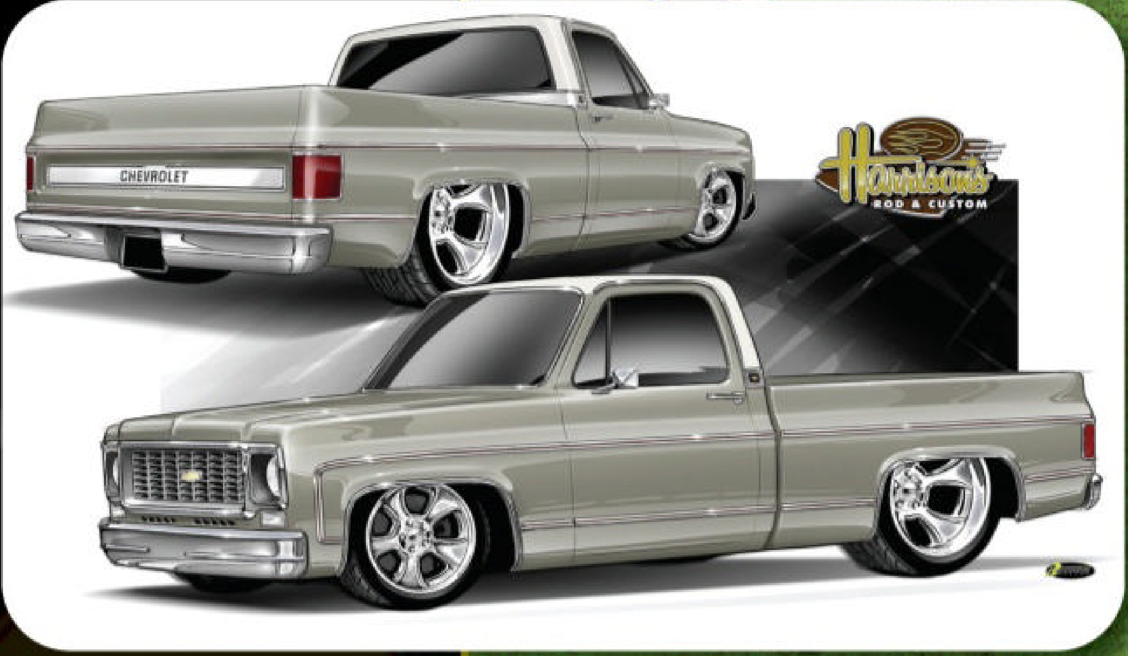

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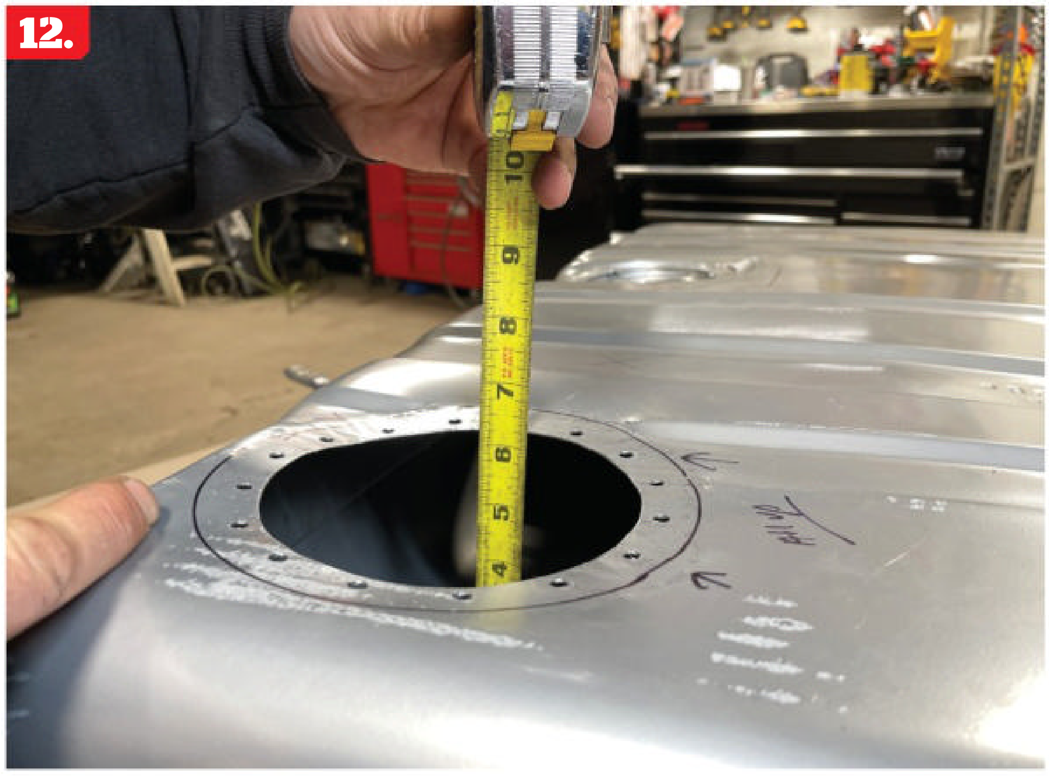

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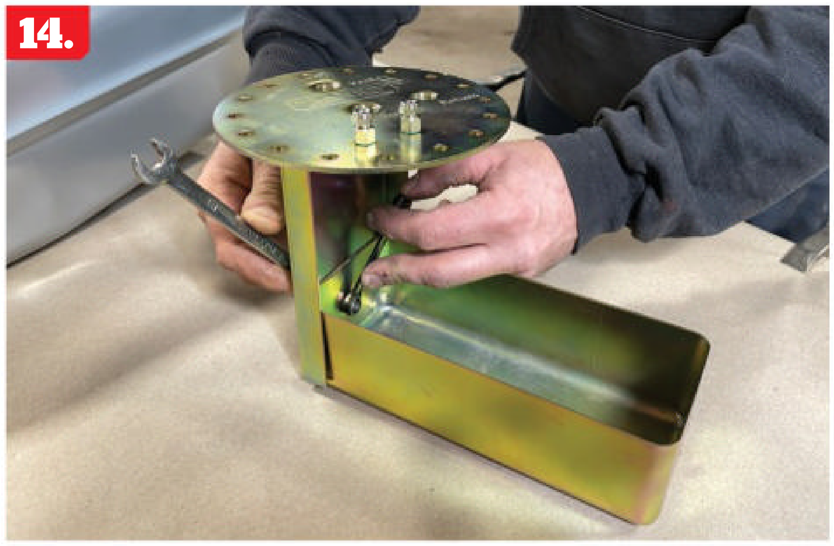


12. Start the build of the pump module assembly by first measuring the depth of the tank to determine the support arms' required length. For our application it was 6.25 inches.

13. The support arm was cut to fit using a band saw.

14. Assemble the support arm to the reservoir tray using the stainless steel #10-32 nut, washer, and bolt provided.

15. Apply Teflon tape to the provided 90-degree supply and return elbows with hose barbs. Dress threads with a dab of fuel-resistant gasket cement as lubricant and screw into the mounting plate. Finally, tighten with a $^{5}/_{8}$-inch wrench, being sure to have them in the desired final position.

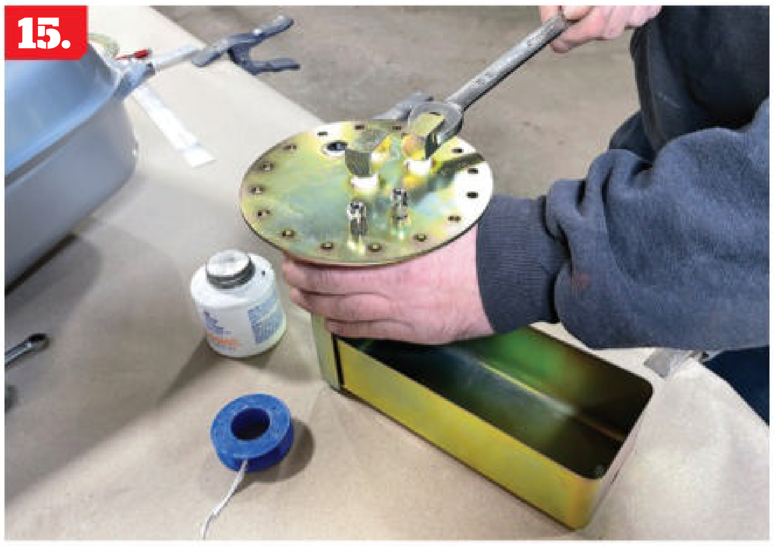
16. Secure the foam sleeve and in-tank filter to the Walbro high-performance fuel pump.

17. Set the pump assembly in the reservoir tray with the filter resting on the tray bottom and the pump outlet directly under the center barbed fitting. Carefully measure and cut the required lengths of supply hose (black). Then measure the return tube (white nylon) noting it will need to be 1 inch above the tray bottom.

18. Secure the supply line to the center barbed fitting with the supplied clamps and install the return tube over the remaining barbed fitting. Note that a heat gun might help with its installation.

19. Using the supplied wire ties, first install the large one through the previously installed black wire tie saddle and around the pump till secure, then trim excess. Follow by installing the small wire tie to secure the pump to the return line and trim excess.

15.



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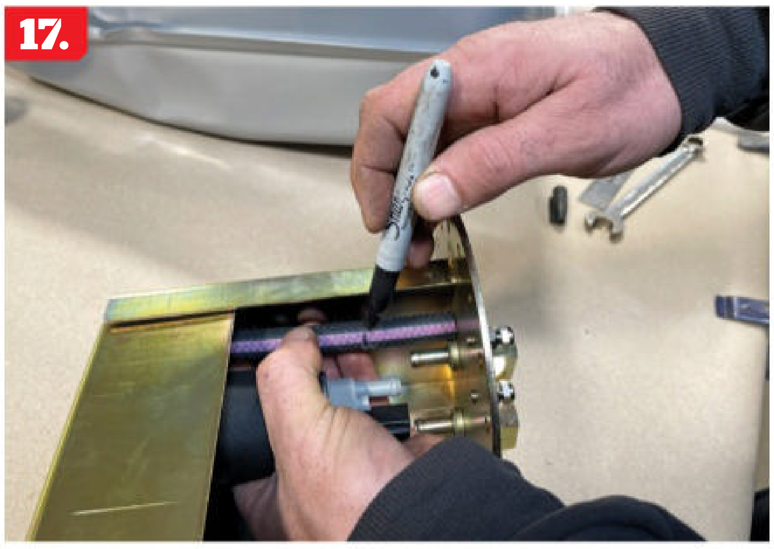

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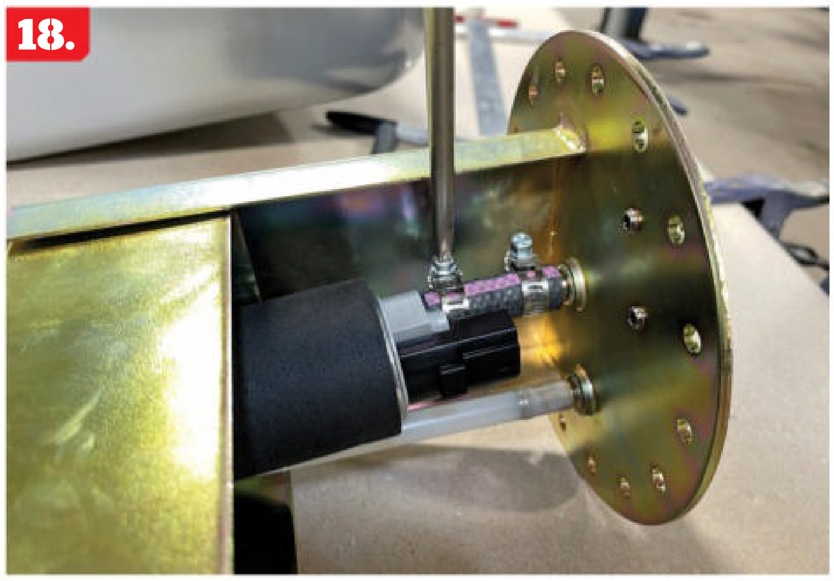

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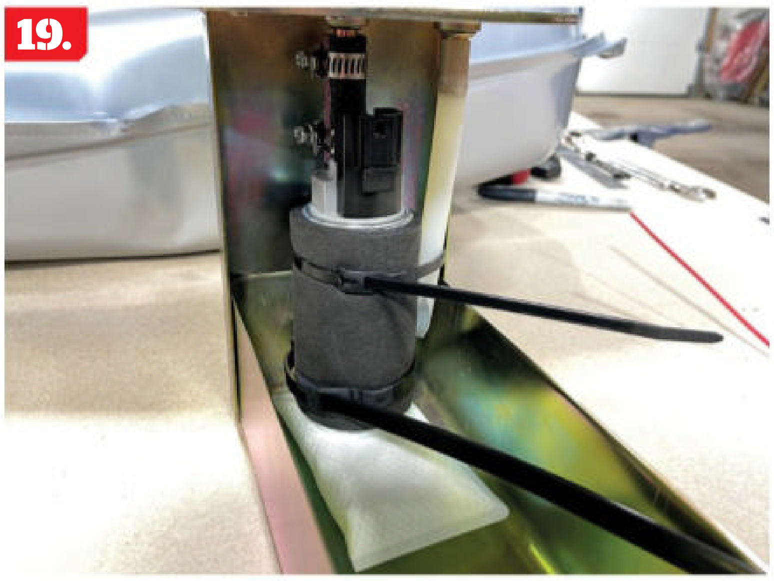

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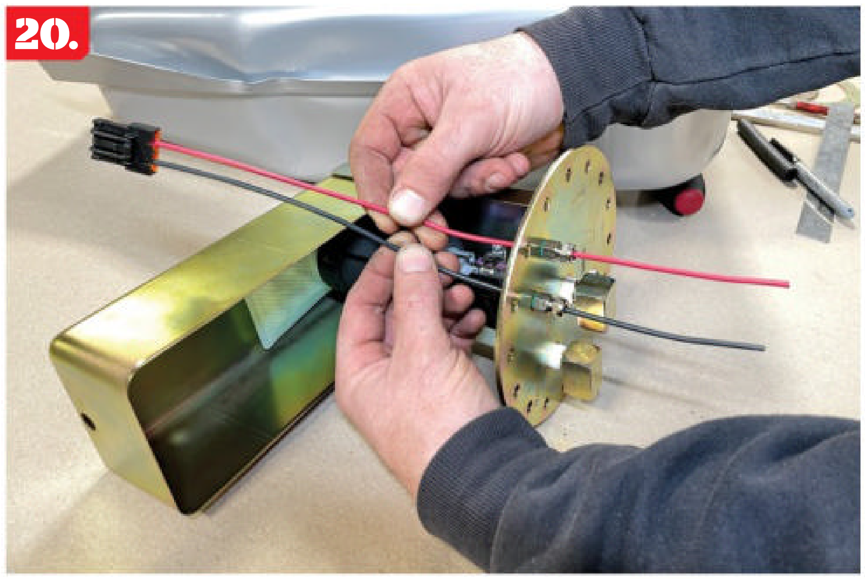
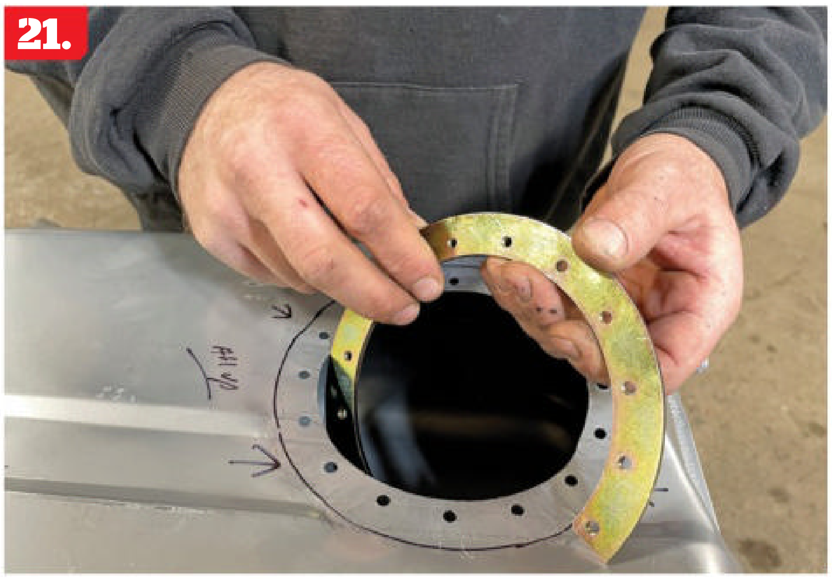


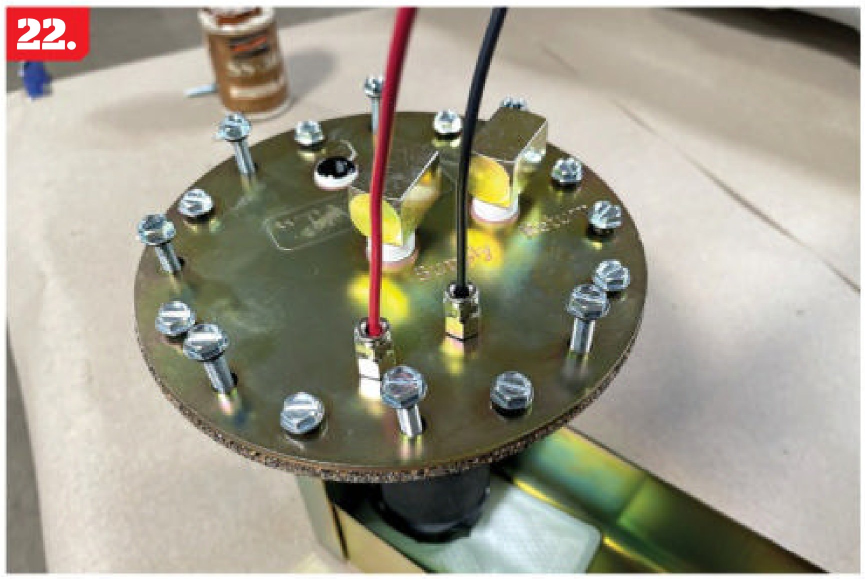
20. Connect the in-tank wiring to your fuel pump and be sure the connection is secure. Follow by routing the wires through the pass-through fittings while allowing a bit of slack to avoid any chafing. Use a 9mm wrench to carefully tighten the upper jam nuts down on the wire with ¼-inch increments till the wiring is secure.

21.



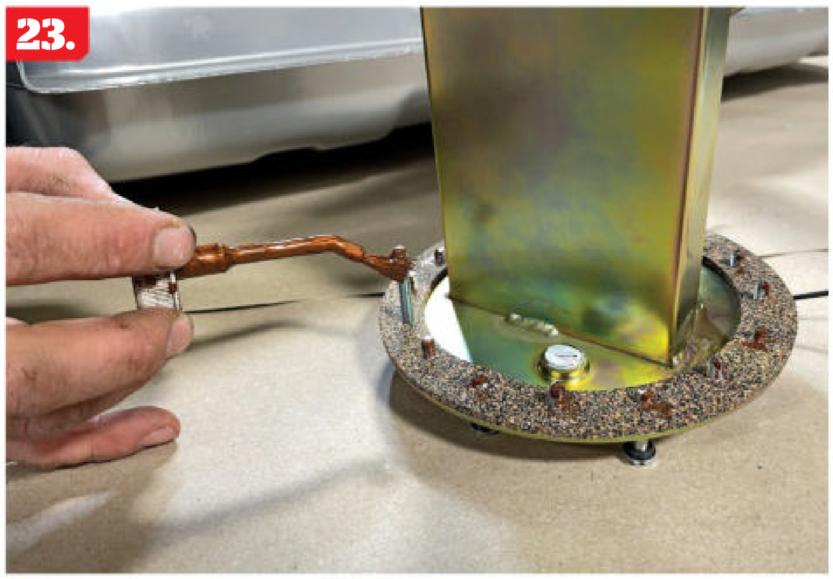
21. Slip the slotted mounting ring into the tank using the slot in the ring. Line up the mounting holes and secure in place with a couple of strips of masking tape.

22.



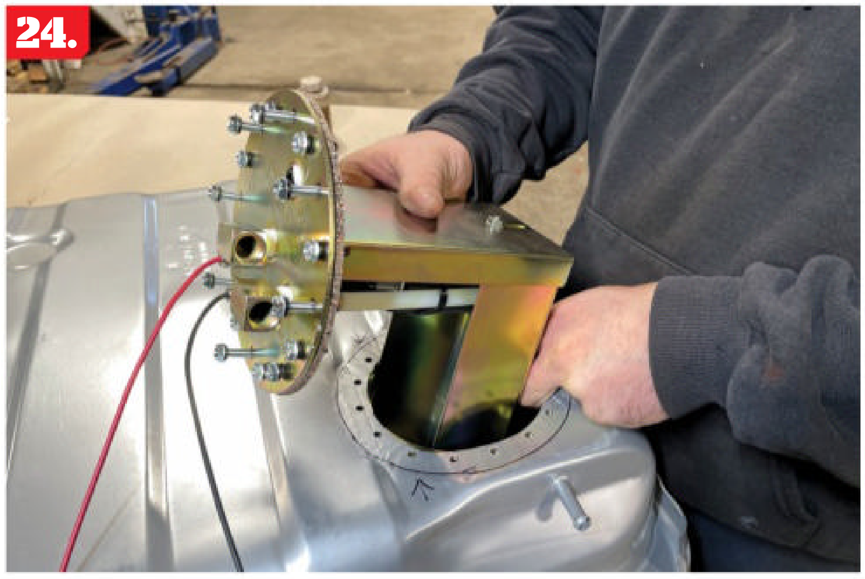
22. Apply a liberal coating of fuel-resistant gasket cement to one side of the 16-hole mounting gasket and stick it to the underside of the mounting plate of the pump module. Then, carefully insert 15 $^{5}/_{8}$-inch screws and a 2-inch screw in the remaining hole.

23.



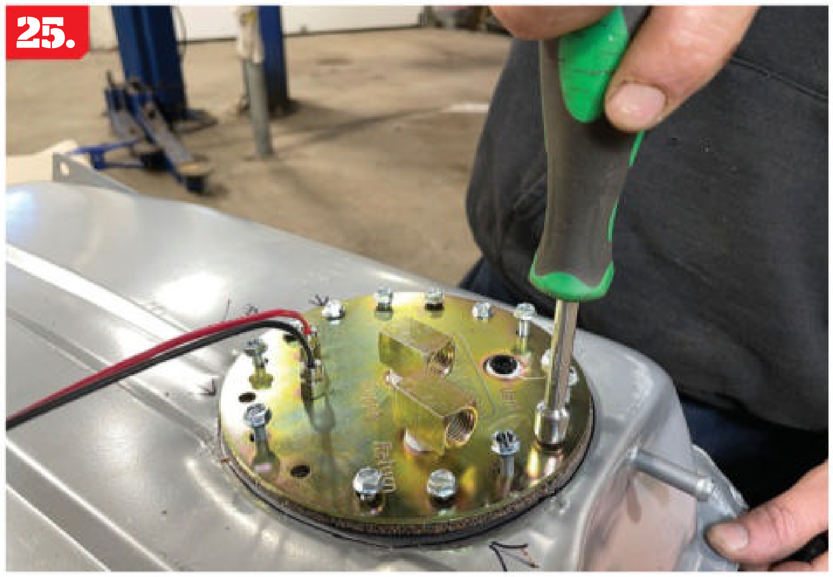
23. With the pump module upside down, apply a coating of antiseize to the threads of each screw. Follow with a liberal coating of fuel-resistant gasket cement to the underside of the gasket to prepare it for installation.

24.



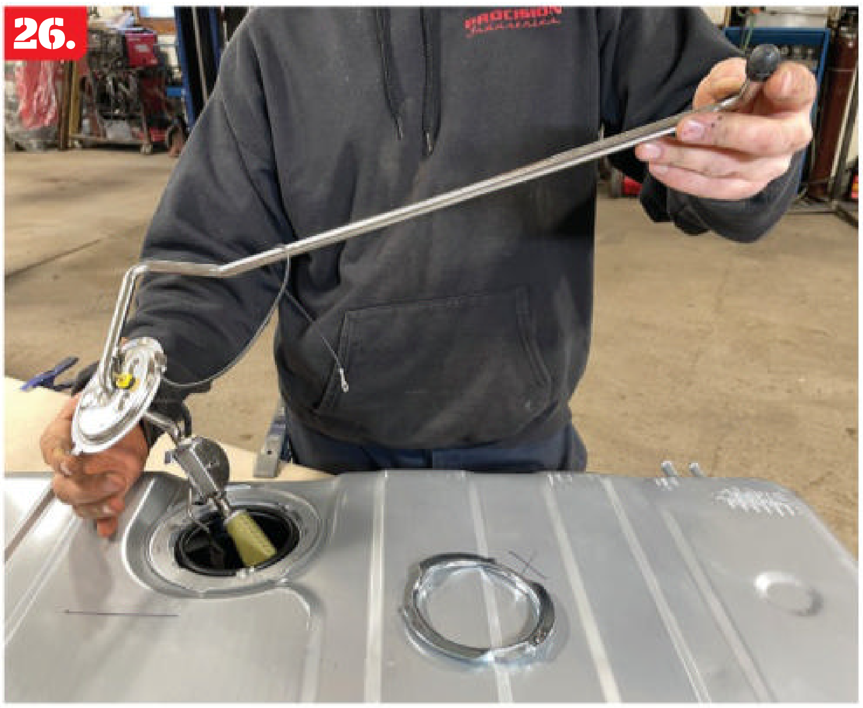
24. Carefully insert the end of the tray into the tank opening and rotate the rest of the module downward and through the opening. Follow by starting the 2-inch screw into the mounting ring.

25.



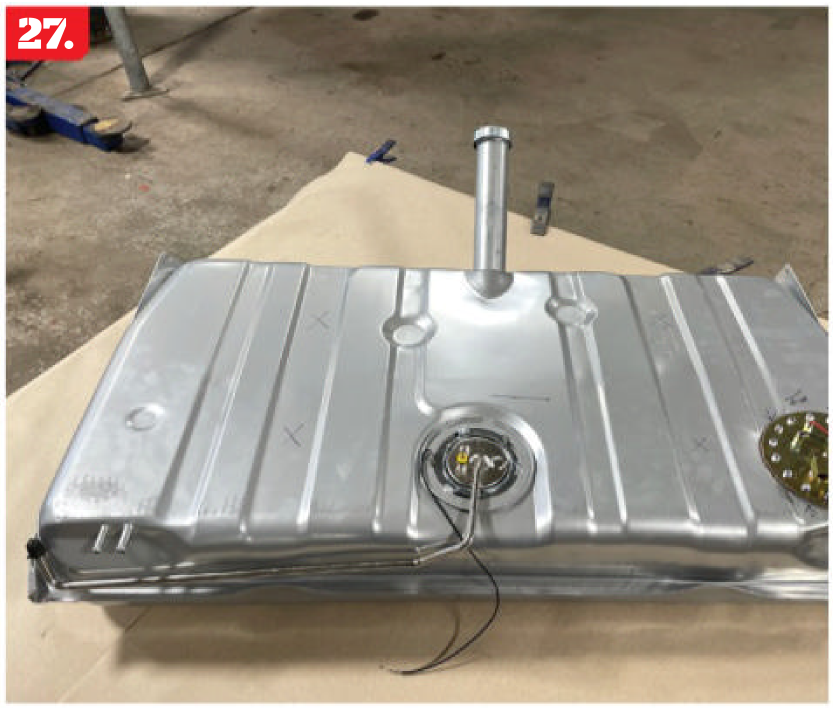
25. Line up the remaining mounting holes by inserting a Phillips screwdriver into the hole opposite the 2-inch screw and draw the ring into place with said screw. Follow by starting the remaining 15 screws and replacing the 2-inch screw with the remaining $^{5}/_{8}$-inch screw. Secure all in a side-to-side format till snug.

26.



26. Install the OER fuel tank sending unit into place with the supplied O-ring and capture ring.

27.



27. Here you can see the tank almost ready for installation. Note on the left side that the original stock fuel supply line on the sending unit has been capped off as well as the return line on the right side of the tank.

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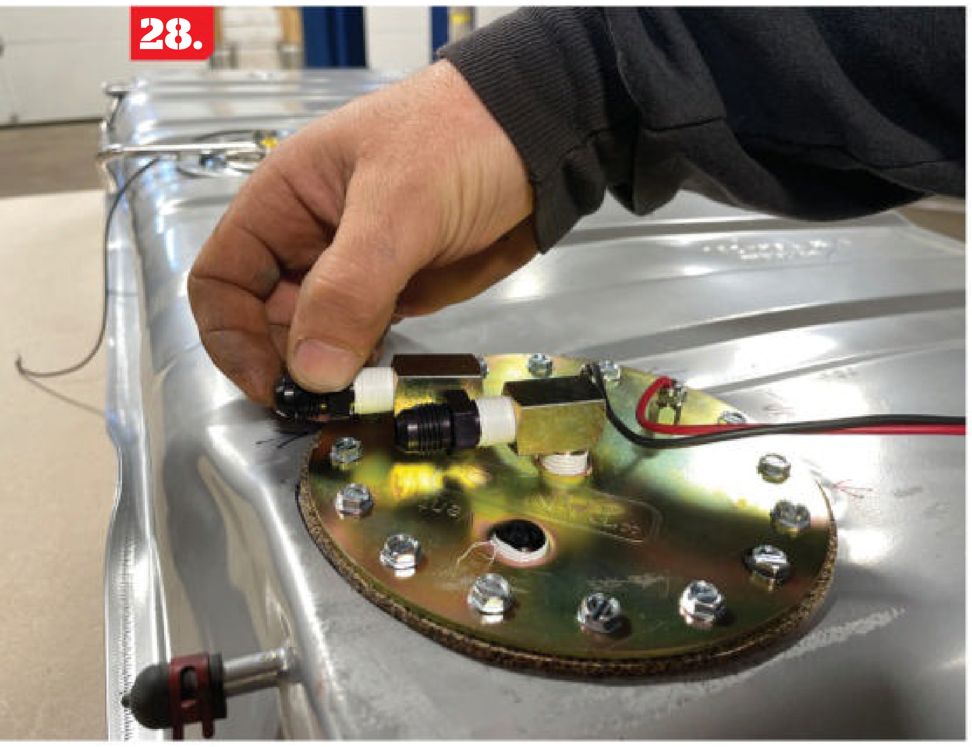
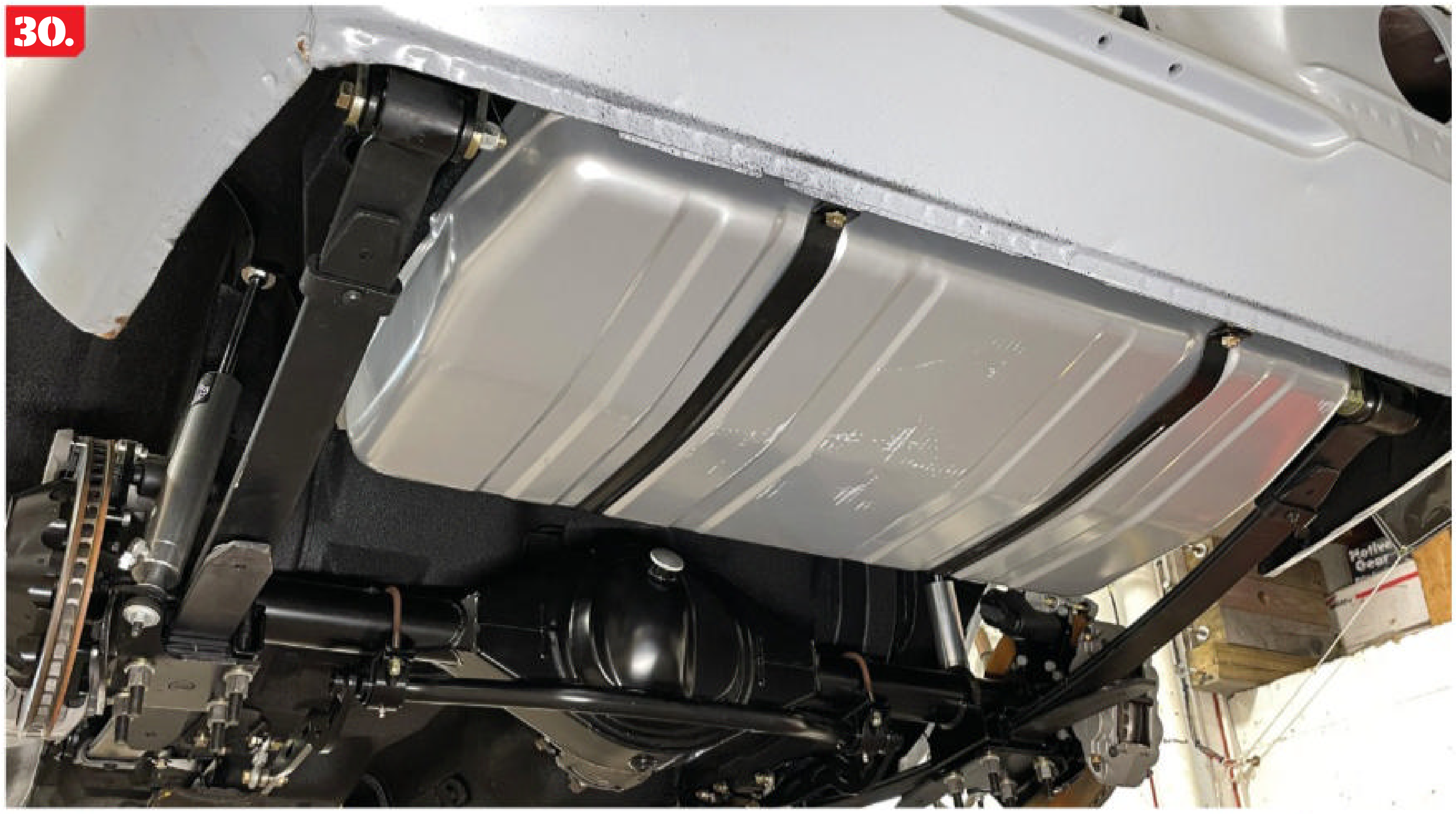


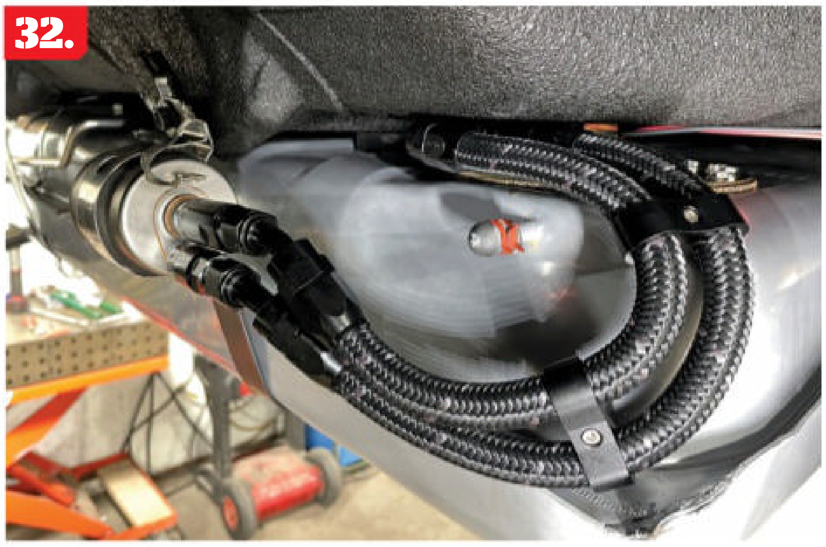
28. A pair of ¼-inch NPT to -6AN adapter fittings were installed to the supply and return line elbows after wrapping the threads with Teflon tape. Note that the vent port has been plugged since we will be running a factory-style vapor canister to vent the system on the tank.

29. With a fresh set of Summit Racing fuel tank mounting straps ready, O'Brien used a transmission jack with a foam pad base to move the tank into place and secured it using a $^9/_{16}$-inch socket



30. The new tank and straps were a perfect fit, giving the car a fresh OEM-style look.

31. Using the front tank strap as a mounting point, the Summit Racing Universal LS fuel filter/regulator (PN 03-0263) was anchored in place. The kit comes complete with -6AN quick-connect fittings and fuel rail fitting to make the install a snap.



32. O'Brien crafted the fuel supply and return lines from a combination of Summit Racing -6AN braided nylon hose with black anodized aluminum line separators and fittings from Russell Performance for a nice clean look.

33. After measuring the -6AN Summit Racing braided nylon hose for the fuel supply to the engine, it was cut, lubricated with Aeroquip hose assembly lube, and fittings were installed to the line.

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34.

34. It's all in the details when running your lines; here you can see how clean the installation is, especially when anchored in place with the proper line clamps.

35. To supply the fuel rails, a -6AN Y-block from Redhorse Performance was used, combined with fittings from Russell Performance and Summit Racing -6AN braided nylon hose.

36. A pair of -8AN hex plugs were installed to the front of the fuel rails.

37. Here you can see the Y-block with fuel supply lines to the rear of the fuel rails to complete the installation.

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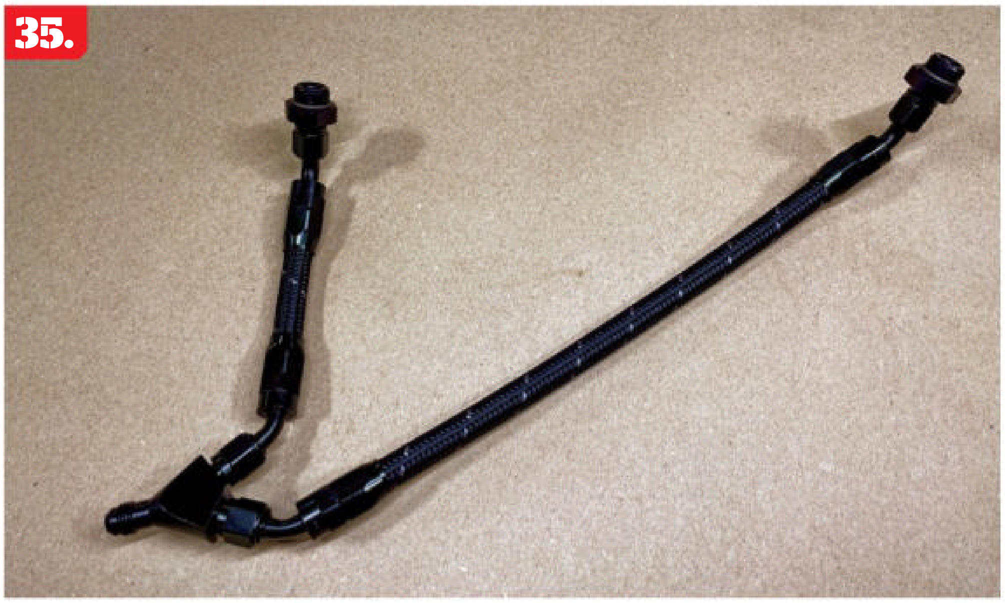

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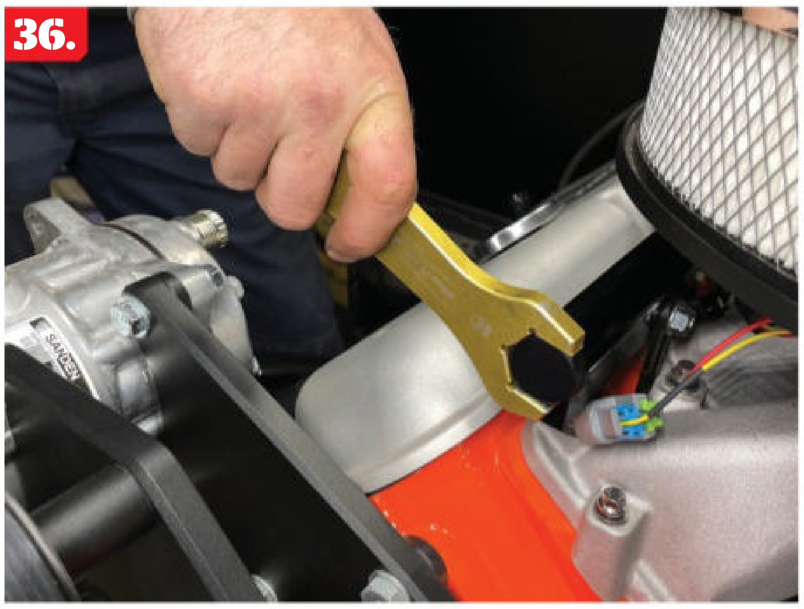

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BOWTIE BUILD-OFF

BY **SCOTTY LACHENAUER** ◆ PHOTOGRAPHY BY **THE AUTHOR**

FABRICATOR STEPS AWAY FROM TWO-WHEELERS TO BUILD A KILLER BUBBLETOP

A few years back, Mike Pugliese of Staten Island, New York, was picked to be a participant on television's reality series *Biker Build-Off*. "I had been building motorcycles since I was a teenager here in New York, but I wasn't really known outside my area. Then they picked me for the show," Mike states. "I was the only guy who didn't do this full time. I just worked out of my garage."

Well, that didn't stop this two-wheel wizard from picking up a big win on national television. "Going up against all these famous and amazing bike fabricators was a very cool experience. I had a great time and learned a lot about myself and the business," Mike points out. "I was grateful for the chance to show my work to the *Biker Build-Off* audience."

After the show, Mike continued building bikes for a select clientele out of his home garage. Time was limited, however, because Mike is a general contractor by trade, and that in itself is a very time-consuming occupation. However, one day Mike decided to set aside some time and change it up a bit.

After years of building bikes, Mike was looking for a new challenge. He really wanted to build a hot rod or muscle car. About 10 years ago he decided to create his own badass groundbreaking Chevy, so he hunted down a viable candidate and got the process started.

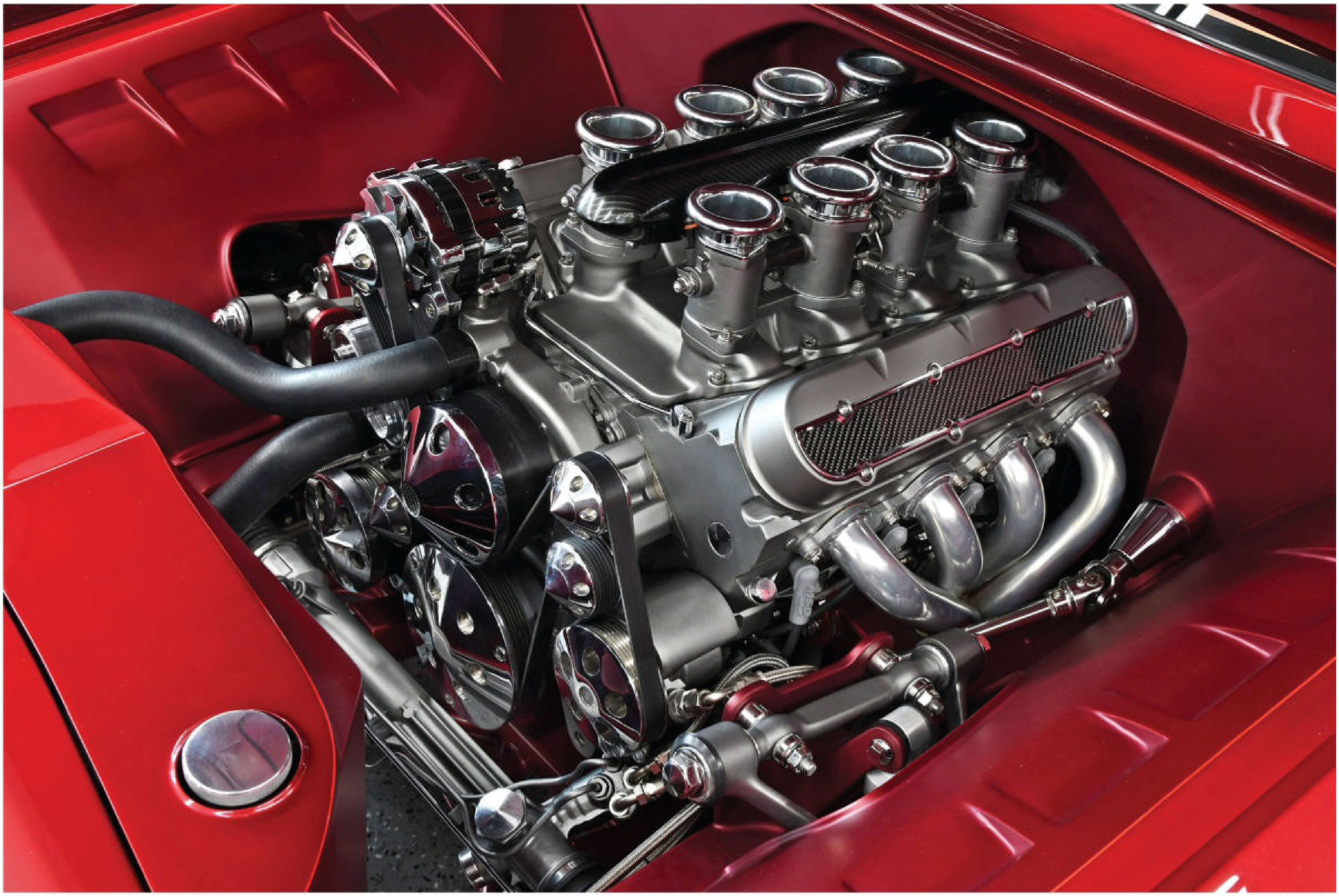
What Mike found was a base-model ’62 Biscayne. “I bought it off an older gentleman; it looked like it was in good shape … until we sandblasted it,” Mike remembers. “I soon found out it had a lot of issues, so I ended up replacing basically every panel on it.” From there Mike hand built his own chassis for the big Chevy using wood templates that were then transferred over to 2x4 steel tubing. The body was then fused with the homebuilt chassis, creating a unique, fullsize unibody Chevy. Up front, a Corvette C4 suspension with rack-and-pinion steering was installed. Out back, a Winters quick-change rearend and an Art Morrison triangulated four-link give this Chevy the ride quality Mike was after.

With that accomplished, Mike built new floors, wheeltubs, a fresh firewall, fan shroud, underhood bracing, and numerous handmade components, such as custom door handles, tucked bumpers, and custom hood hinges. From there, he and good friend Tommy Bilotti sourced a top from a ’61 Buick Invicta and transplanted it on the Chevy, only to remove it later and chop it 2 inches for a sleeker look. He also decided to flush-mount the glass, which was a huge undertaking, but the results speak for themselves.

Inside the cockpit Mike installed a ’59 Chevy dash that he shortened 6 inches to fit correctly. He then added a brake master cylinder and clutch cylinder along with two computers under the dash. Next was the air conditioning unit, all installed precisely to keep the clean look he was after.

When it came time for bodywork, Big Al Yaursinsky did all the fine work and got it into primer. Mike then brought it back to his home garage and basted the car in a custom PPG/House of Kolor blend Candy Apple Red. He then cut and buffed the car and added some satin clear. Good friend Frank Inzerillo at Rooster Graphics added a fine pinstripe, separating the satin and clear.

To power the ride, Mike needed something special for that one-off, custom-designed engine bay to cradle. He went to Turn Key Powertrain in Oceanside, California, to have an LS2 built for the car. It boasts cathedral port aluminum heads, forged internals, and a Comp Cams hydraulic bumpstick. Once home, he added the Borla Eight Stack injection. Its polished good looks fit the car perfectly. Mike then sourced a TREMEC TKO five-speed transmission to get it through the gears and to handle the 699hp combination.



TECH ✓

OWNER: Mike Pugliese, Staten Island, New York
VEHICLE: '62 Biscayne

Engine

TYPE: LS2 small-block V-8
BLOCK: Aluminum
DISPLACEMENT: 364 ci
COMPRESSION RATIO: 10:1
BORE: 4.00
STROKE: 3.622
CYLINDER HEADS: Cathedral port aluminum
ROTATING ASSEMBLY: Forged steel crankshaft, forged aluminum pistons, forged powdered metal steel connecting rods
VALVETRAIN: Hydraulic roller lifters, beehive valvesprings, diecast roller fulcrum rocker arms
CAMSHAFT: Comp Cams
INDUCTION: Borla eight-stack injection
IGNITION: FAST engine controller
EXHAUST: Stainless steel exhaust headers, stainless steel exhaust, custom low-profile mufflers
OUTPUT (at crank): 699 hp

Drivetrain

TRANSMISSION: TREMEC TKO five-speed
REAR AXLE: Winters quick-change with 3.78 gears

Chassis

FRAME: 2x4 rectangular tube unibody design by owner
FRONT SUSPENSION: Corvette C4 front independent suspension, rack-and-pinion steering
REAR SUSPENSION: Art Morrison triangulated four-bar suspension
BRAKES: Baer 13-inch rotors and six-piston calipers front and rear

Wheels & Tires

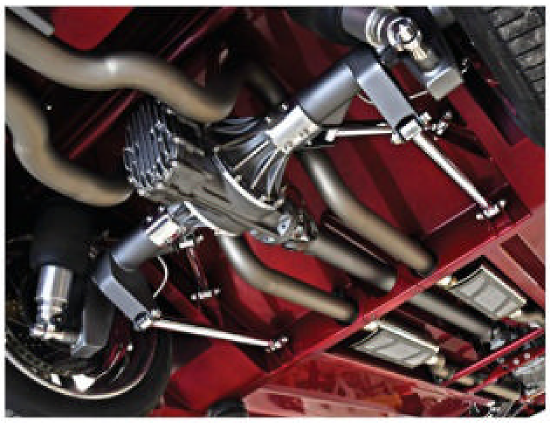
WHEELS: Schott Modsport d.concave, 18x8 front, 20x12 rear
TIRES: Pirelli P Zero 225/40R18 front, 315/35R20 rear

Interior

UPHOLSTERY: Chris McClintock at Bux Customs (Pottstown, PA)
MATERIAL: Relicate Napalia Spezia leather, Daytona Bronze carpet
SEATS: Bux Customs buckets
STEERING: Evod Impala steering wheel
SHIFTER: TREMEC
DASH: '59 Impala
INSTRUMENTATION: Classic Instruments

Exterior

BODYWORK: Big Al Yaursinsky
PAINT BY: Mike Pugliese
PAINT: PPG/House of Kolor custom Candy Apple Red
HOOD: Stock with modified inner brace
BUMPERS: Custom one-piece, tucked
HOOD HINGES: Custom with hidden gas pistons by owner
DOOR HANDLES: Custom by owner
ROOF: '61 Buick Invicta chopped 2 inches
GLASS: Flush mount



Back in the cockpit, Mike fabricated the interior panels, one-piece headliner, and kick panels. He then sent the car out to Bux Customs of Pottstown, Pennsylvania, where Chris McClintock and crew did their magic and built the front and rear seats, door panels, center console, and put the eye candy on everything Mike did at home. “They did a killer job on the interior and finished trunk,” Mike boasts.

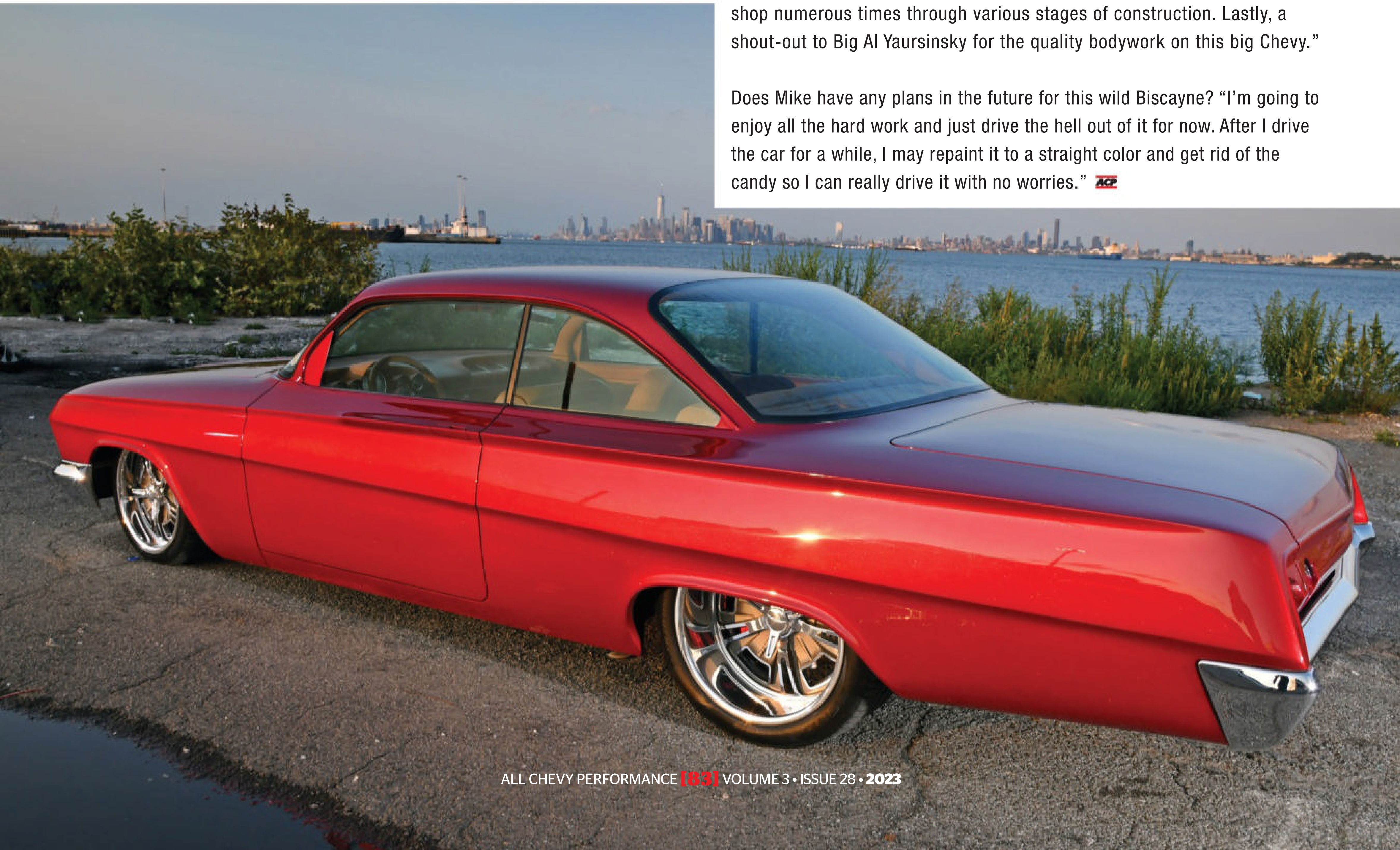
Baer 13-inch rotors and six-piston calipers front and rear help this Chevy beast stop on a dime. To really set off this long and lean cruiser, Mike chose Schott Modsport d.concave wheels (18x8 front, 20x12 back) wrapped in Pirelli P Zero tires (225/40R18 front, 315/35R20 rear).

Low-profile 2½ inch Stainless Steel Specialties mufflers churn out a healthy exhaust note while a Griffin aluminum radiator helps keep this Chevy cool even during those hot New York summers.

Once completed, Mike reflected on his seven-year build. “The car is just awesome–it handles like a go-kart,” Mike claims. “For a car as big as this, that’s saying a lot. At this point I wouldn’t change a thing as it came out exactly how I imagined, and also because it took me so long to build.

“I’d be remiss if I didn’t give props to those who helped along the way. I would like to thank Bux Customs, Chris McClintock, and the crew for putting one of their beautiful interiors in my car. That just brought my ride to another level. I have to thank my friend Frank Inzerillo of Rooster Graphics for his subtle pinstripe and dropping everything to come to my shop numerous times through various stages of construction. Lastly, a shout-out to Big Al Yaursinsky for the quality bodywork on this big Chevy.”

Does Mike have any plans in the future for this wild Biscayne? “I’m going to enjoy all the hard work and just drive the hell out of it for now. After I drive the car for a while, I may repaint it to a straight color and get rid of the candy so I can really drive it with no worries.”



BY **RON CERIDONO** WITH **JERRY DIXEY** PHOTOGRAPHY BY **DANA SRBINOVICH** & **JERRY DIXEY**

1. Jerry Dixey wanted a vehicle that was both practical for traveling around the country and had classic good looks; he got both with this '57 Chevrolet station wagon.

ONE FOR THE ROAD

A STATION WAGON BUILT FOR THE LONG HAUL

Almost everyone who grew up in the '50s can relate to a station wagon; it was the minivan of the era. Jerry Dixey spent a large portion of his early years in his parents' station wagon, doing everything from going to the drive-in to taking family vacations. Station wagons were true utilitarian vehicles back then and they make cool cruisers today, as we're about to prove.

Over the past 25 years Dixey has traveled many miles in state-of-the-art hot rods leading road tours all over the country, first as a magazine staffer and now on his own (see Jerry Dixey's Road Tourians Facebook page or visit roadtourians.com). Some time ago Dixey decided a station wagon would be the perfect mode of transportation for his weeklong road trips and, as luck would have it, a friend spotted a '57 Chevy four-door wagon that was available at the NSRA Nationals. Most of the expensive things already done—the body and paint were fine, the glass was new, a nice 283ci Chevy was underhood bolted to a good automatic transmission. Best of all, the owner was looking to sell or trade. After some negotiating, Dixey was down a '27 T roadster and a few bucks and up a station wagon.

It's often said, "Be careful what you wish for, you might get it." Well, Dixey got the wagon he wished for, and it was in fact a solid car, but the chassis he got revealed technology straight out of 1957. As Dixey describes it: "When I drove the wagon I realized there was a problem. The ride was horrible. It swayed and wandered and bounced and bucked. The Chevy needed help, so a call was made to Dana Srbinovich at Dana's Tri Five Garage." An expert on these cars, Dana summed up the situation succinctly by explaining, "This is how a 65-year-old Chevy drove."

With the wagon delivered to Dana's shop, a plan was formulated to improve the Chevy's ride and handling characteristics without blowing up Dixey's budget. With the front sheetmetal removed, the OEM suspension components were replaced with new and improved parts from Classic Performance Products (CPP). A major improvement was made by replacing the original manual steering gear with a CPP power steering box. This all-new 500 Series steering gear features a one-piece housing with all-new internal parts. The 14:1 steering ratio provides crisp steering response with little effort. In the rear, new springs, bushings, and shackles were installed and new CPP brakes and double-adjustable shocks were added all around.

Once the chassis was squared away, Dana turned his attention to the inside of the Chevy. A new Dakota Digital RTX instrument cluster was added. While it looks to be straight out of 1957, there is a TFT (thin film transistor) digital readout window (offering over 30 user-selectable color options) with tach, oil pressure, and voltage displays made up of hidden LED bars only visible when the key is on.

2.

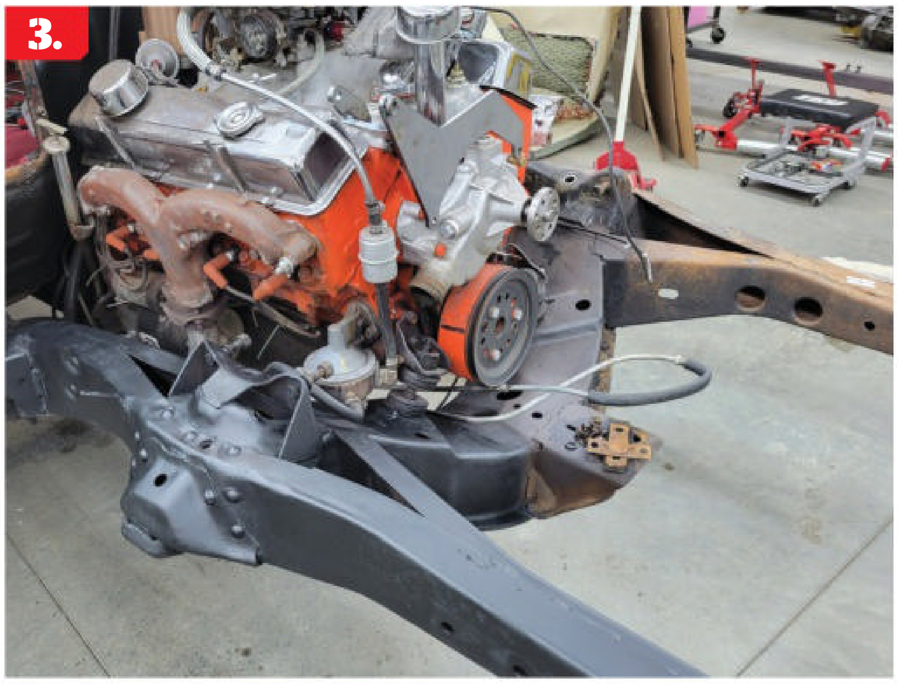
2. Dana Srbinovich started the wagon's updates by removing the front sheetmetal. Note the Chevy had been updated with front disc brakes and a dual master cylinder.

3. With the original suspension components removed, Srbinovich cleaned and painted the framerails. The 283ci small-block was found to be in good shape and was left alone.

4. CPP supplied new upper and lower control arms that provide increased caster for improved straight-line stability. Also included were new ball joints, crossshafts, and poly bushings.

5. New front brakes from CPP included 13-inch cross-drilled and slotted rotors, billet aluminum hubs, and two-piston calipers. They are said to provide 60 percent more braking power than the previous conversion.

3.



4.

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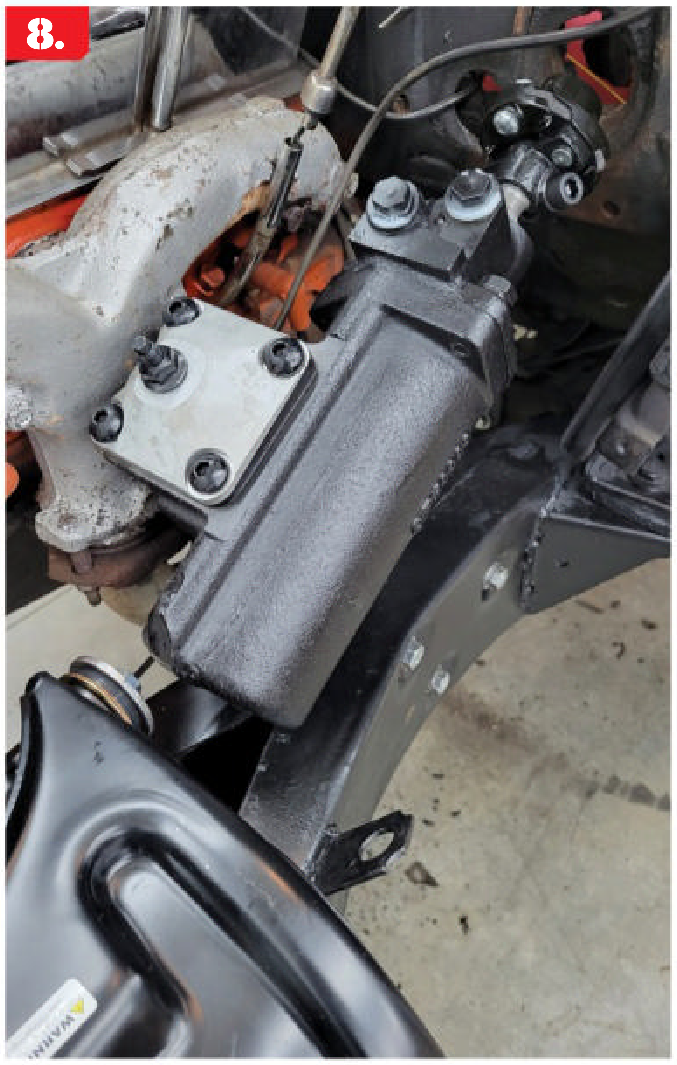
6. All four well-worn shock absorbers were replaced with Viking double-adjustable units that allow compression and rebound damping to be fine-tuned for the best ride quality.

7. Along with the front shock absorbers, a fresh set of stock-height coil springs were installed along with new rubber snubbers.

8. For easier, more precise steering, Srbinovich swapped the Chevy's original manual steering gear for a CPP 500 Series power steering box. The conversion kit comes with a power steering pump, hoses, and early model small-block power steering pump bracket.

8.



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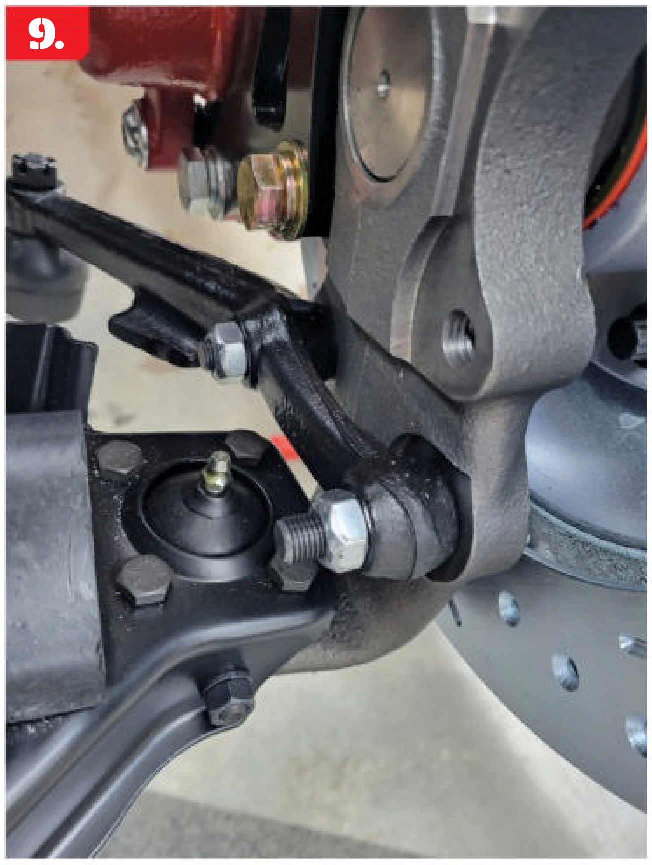
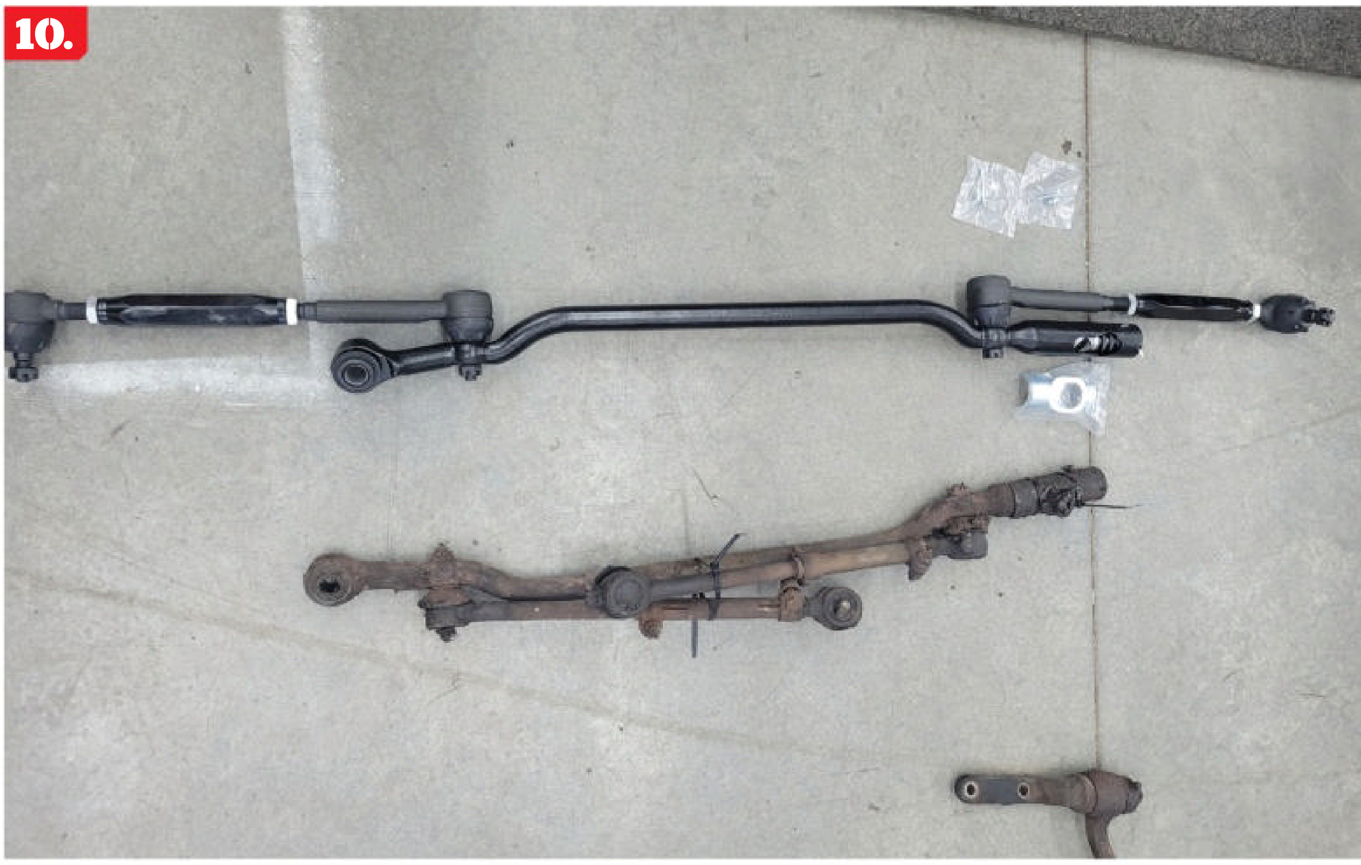


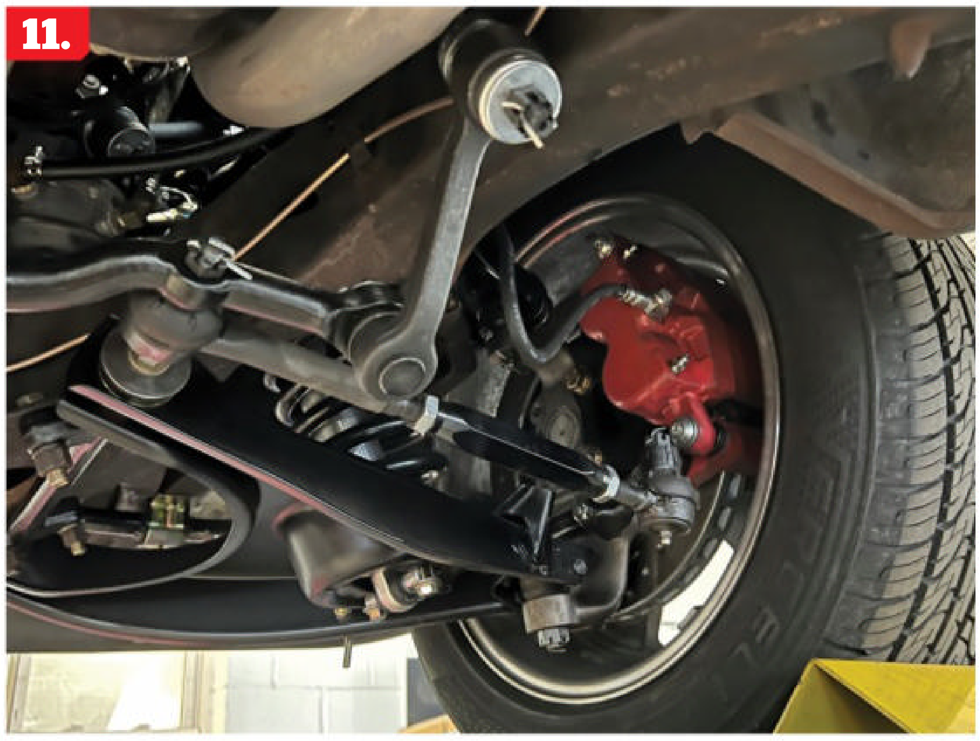
9. For a sleeker stance, CPP's 2-inch drop spindles were part of the suspension update. They accept bolt-on caliper mounting brackets and steering arms.

10.



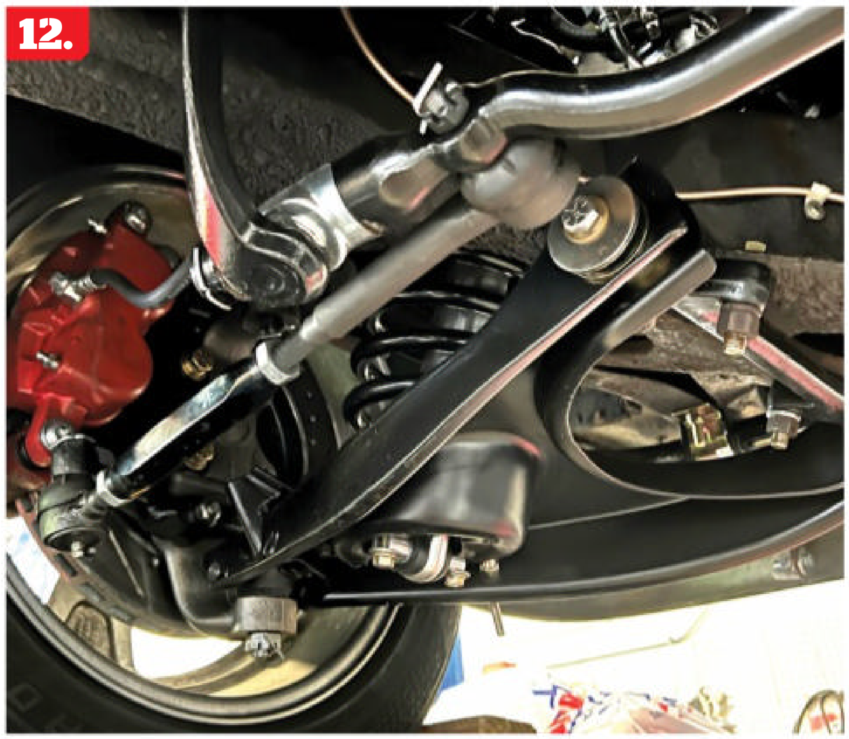
10. To eliminate the common slope that comes with a worn-out steering linkage, a new centerlink and tie-rod ends from CPP were installed.

11.



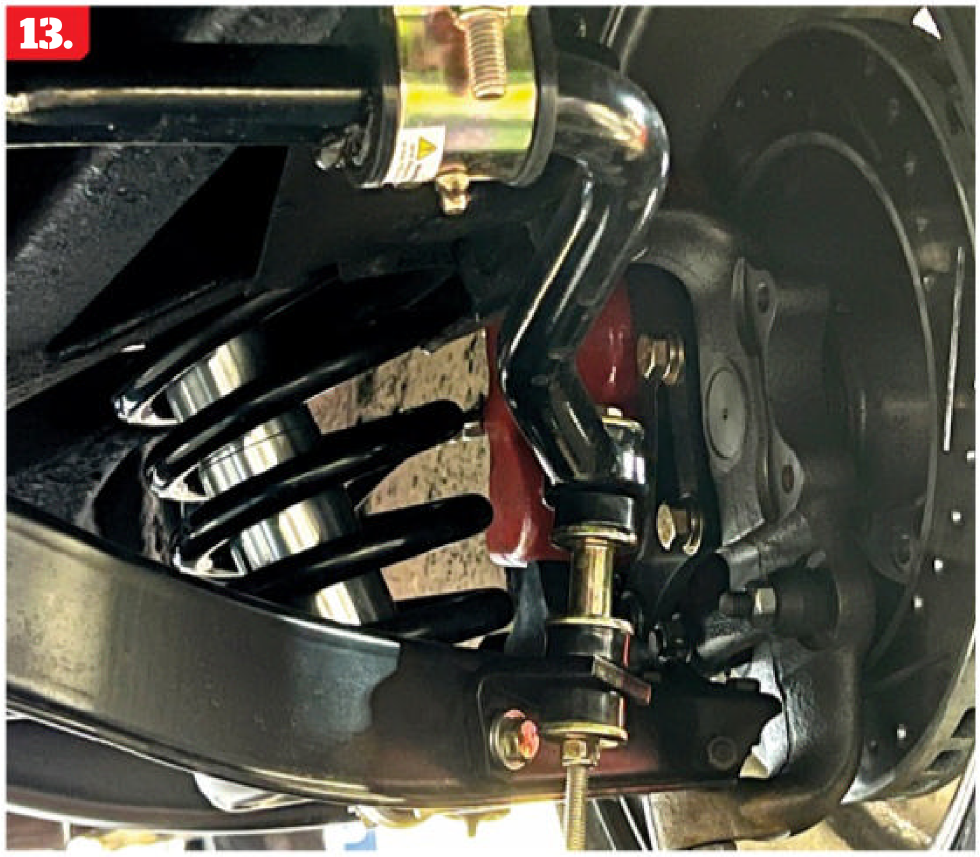
11. The idler arm was replaced as it is often a source of vague steering response. Note the CPP tie-rod adjuster uses locknuts to maintain proper alignment rather than the factory split sleeves and clamps.

12.



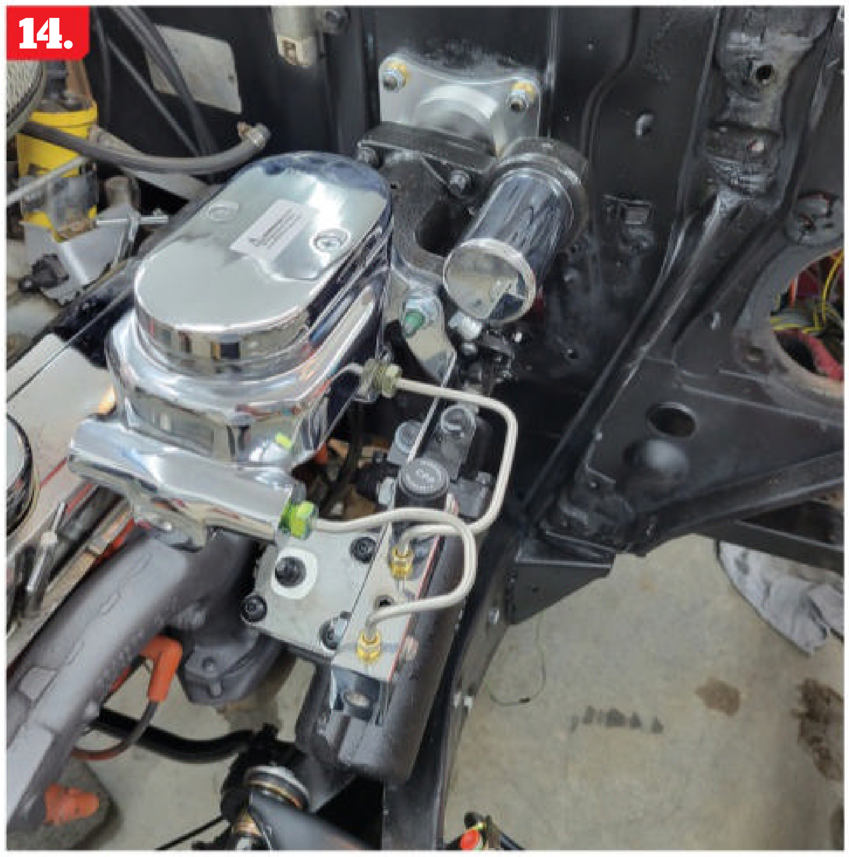
12. CPP's new power steering box accepts the stock pitman arm, however Srbinovich opted to install a new replacement.

13.

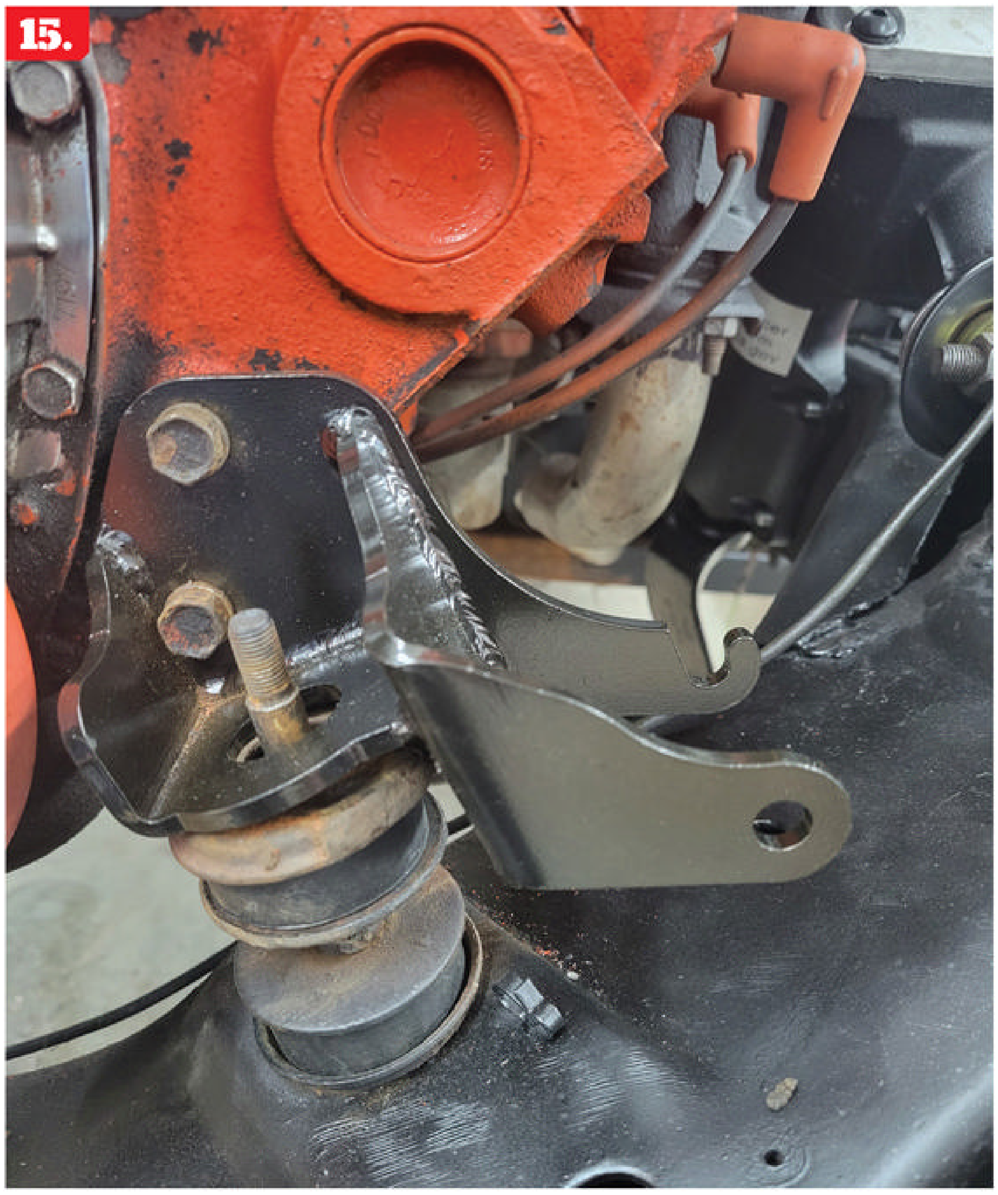


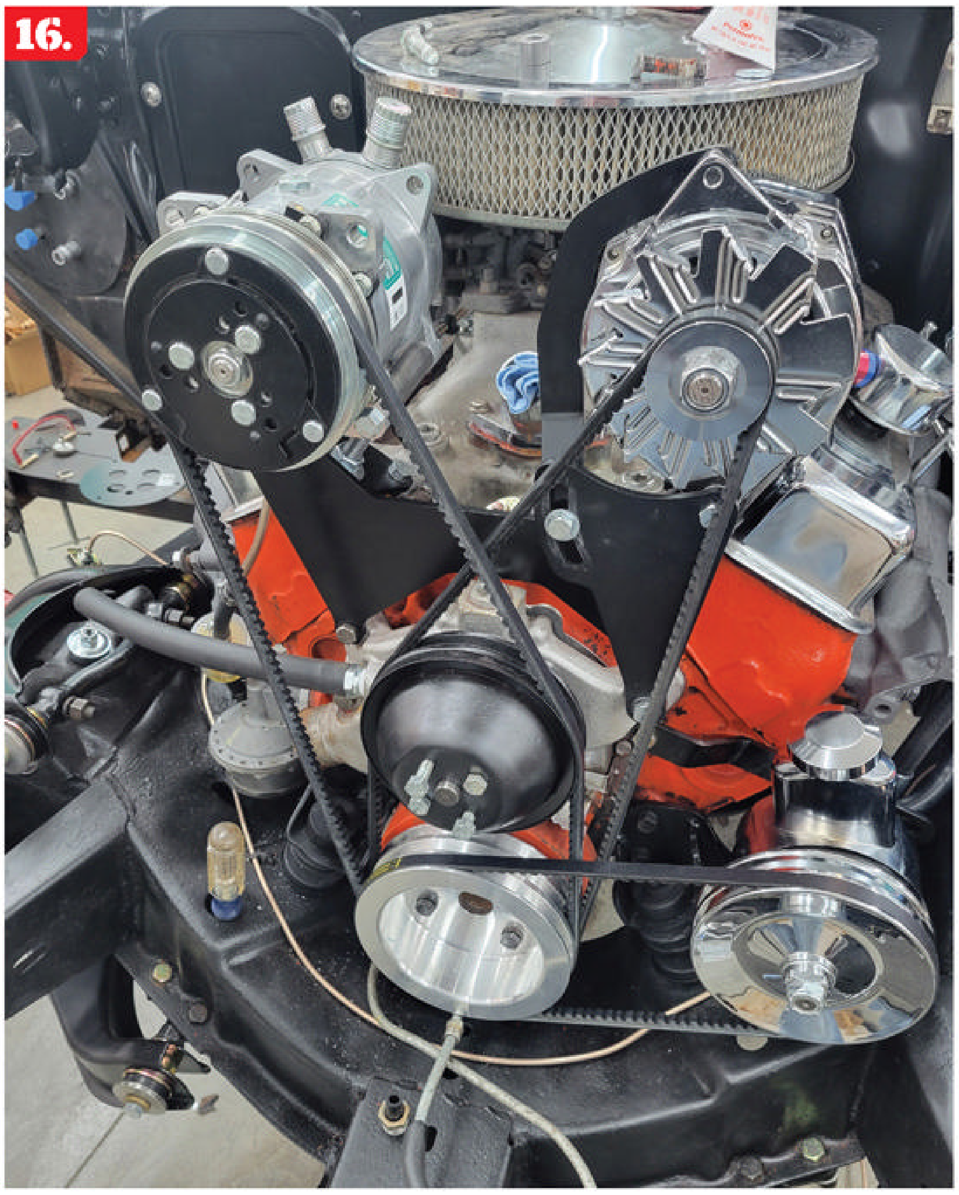
13. To increase stability in corners, 1¼-inch sway bars equipped with poly bushings and end-links were added to both ends of the chassis.

14.



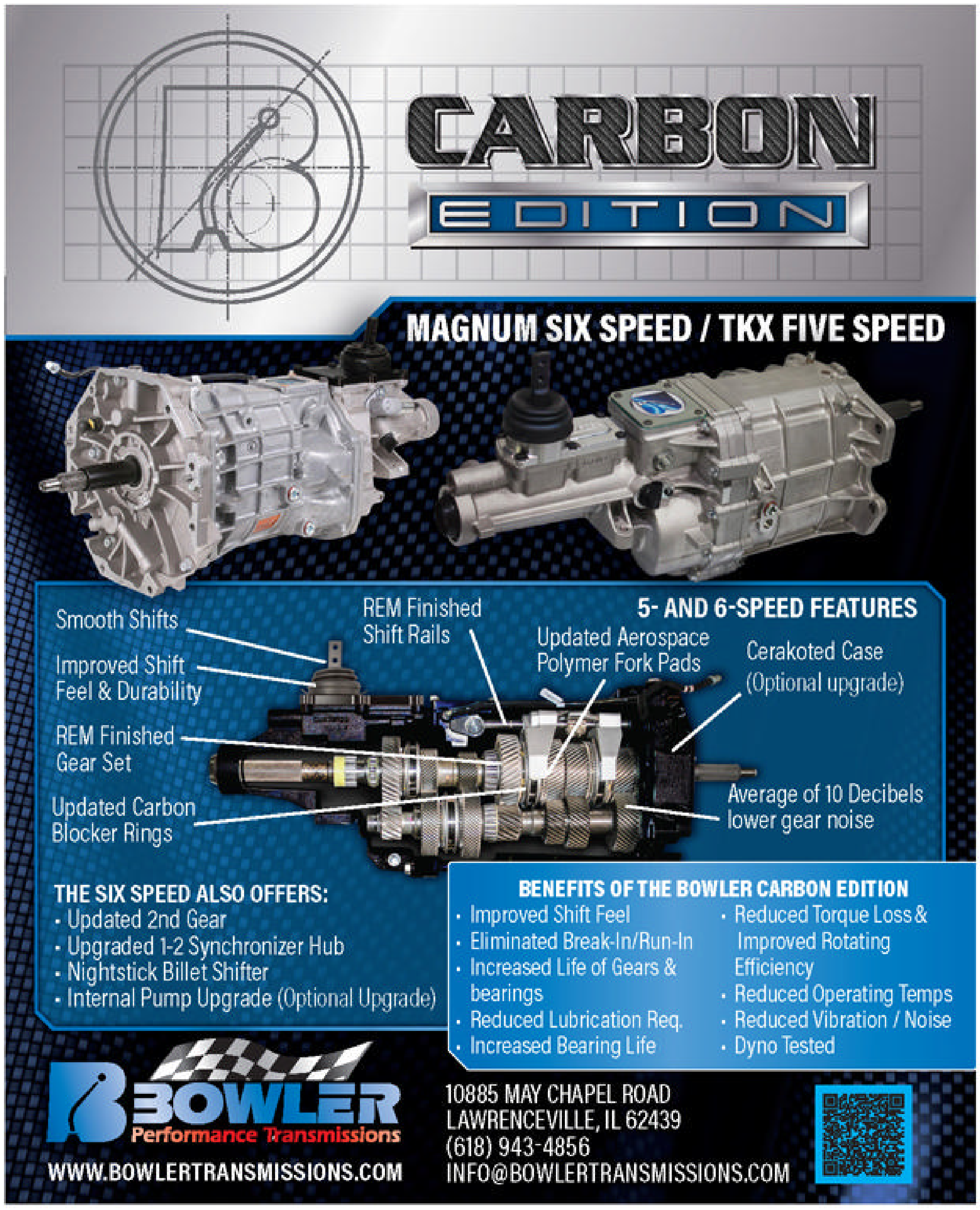
14. Stopping power is enhanced by a CPP hydraulic brake booster. Rather than engine vacuum, the booster is powered by the power steering pump. Included with the master cylinder kit is an adjustable proportioning valve.





15. This is typical of Tri-Five Chevy front engine mounts. The new left side engine bracket bolts to the block and mounts the CPP power steering pump.

16. Here the power steering pump has been installed along with a new A/C compressor and one-wire alternator with bracketry from Vintage Air.



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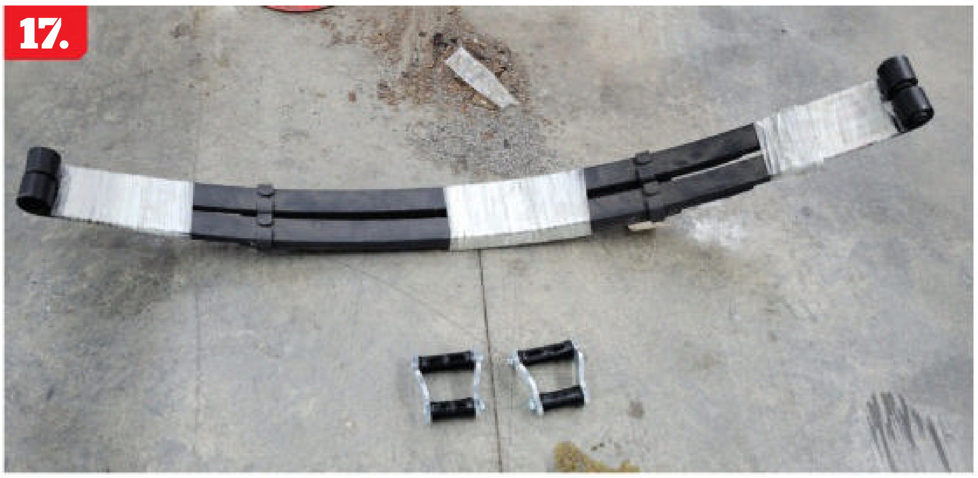

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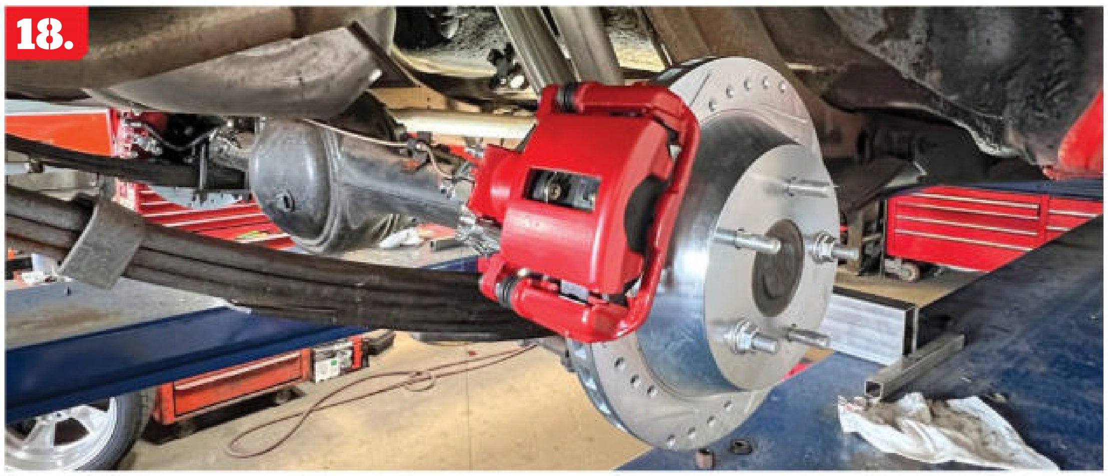

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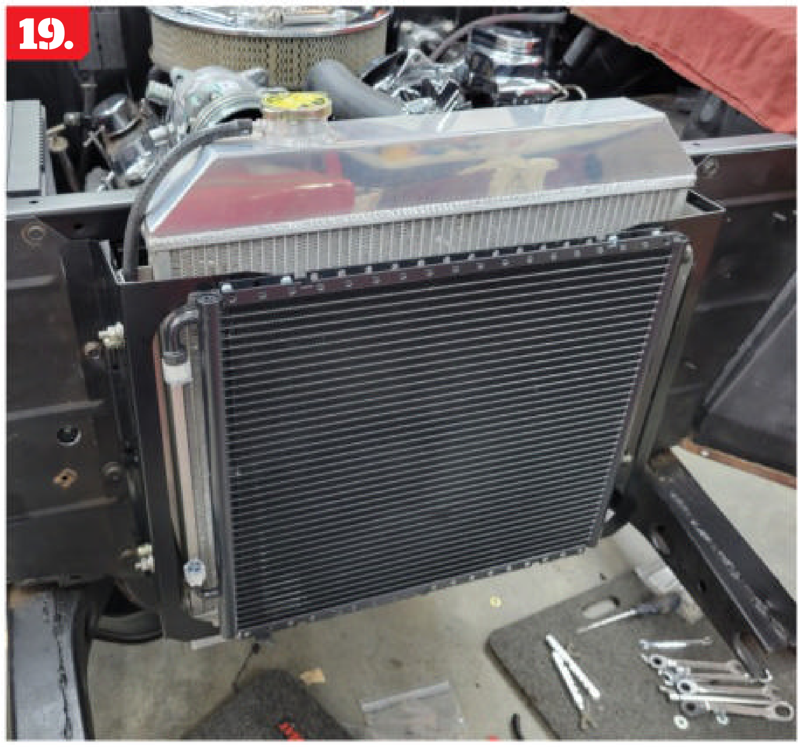


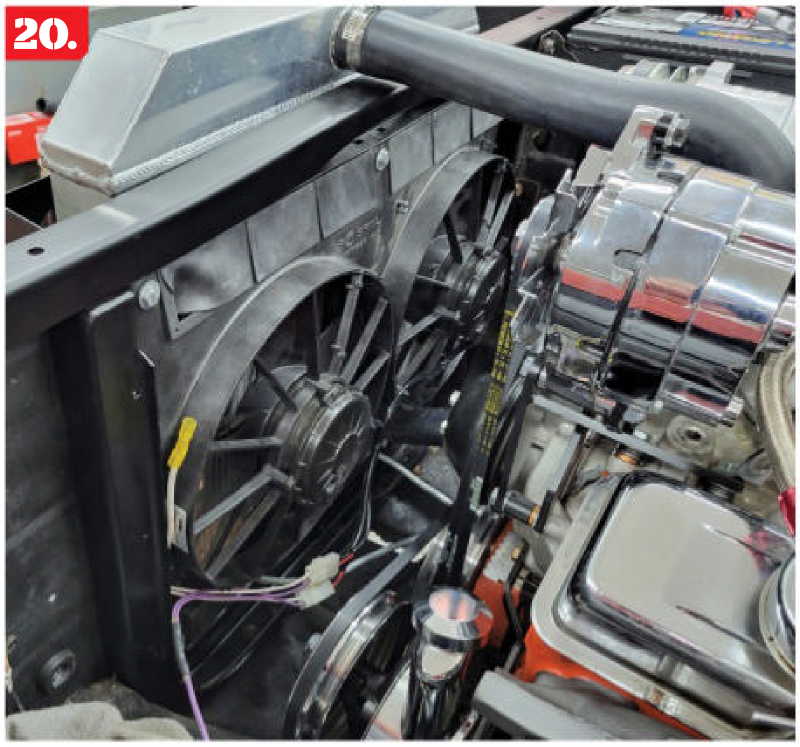
17. In the rear of the wagon new springs with five leaves were installed. They use rubber bushings in the front eyes and shackles with poly bushings in the rear.

18. To increase stopping power, the rear drum brakes were replaced with 12-inch drilled-and-slotted rotors and Lincoln calipers with built-in parking brakes.

19. A Vintage Air SuperFlow condenser was added to the existing aluminum radiator. Note the radiator is mounted ahead of the core support in the "six-cylinder" position.

20. To keep engine operating temperatures under control, Srbinovich installed dual electric fans with a shroud from Vintage Air.

20.



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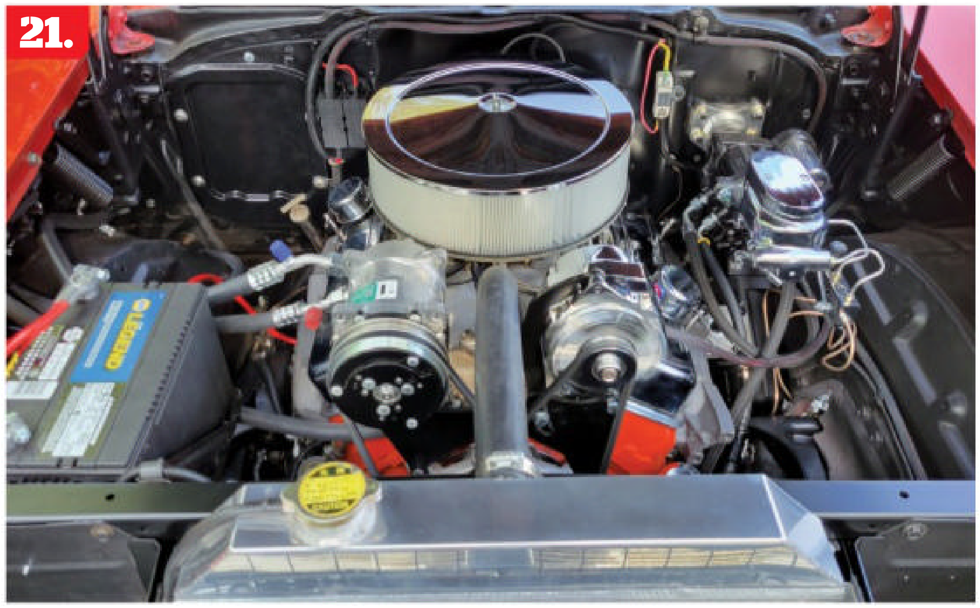

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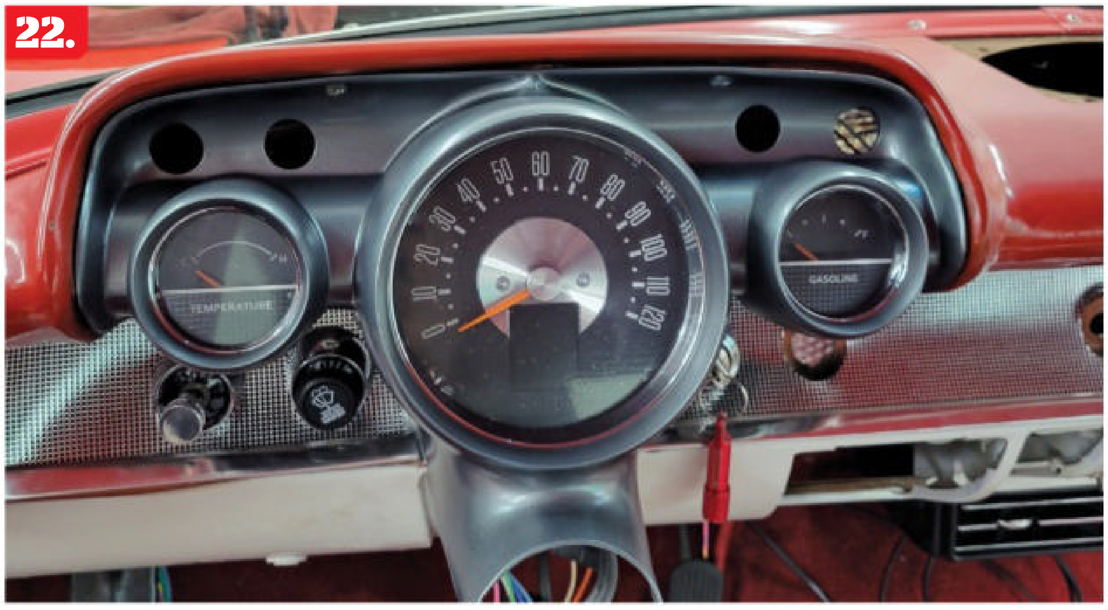

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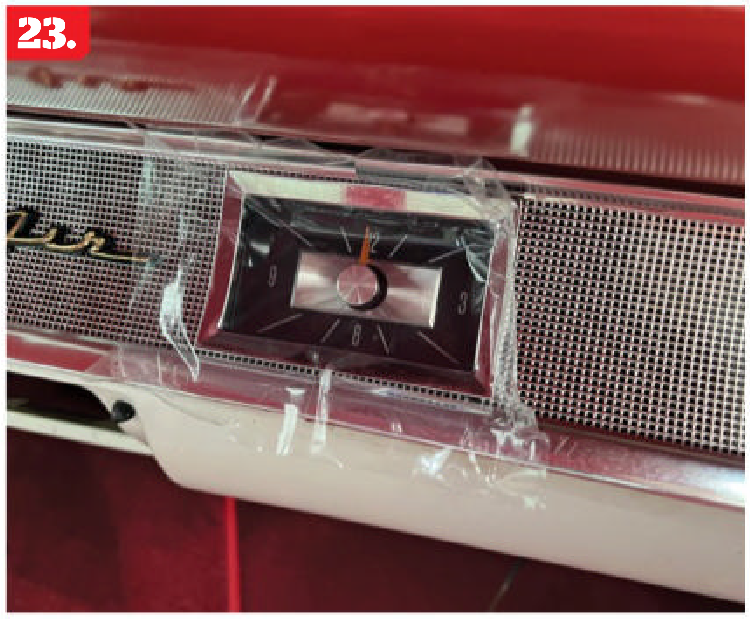


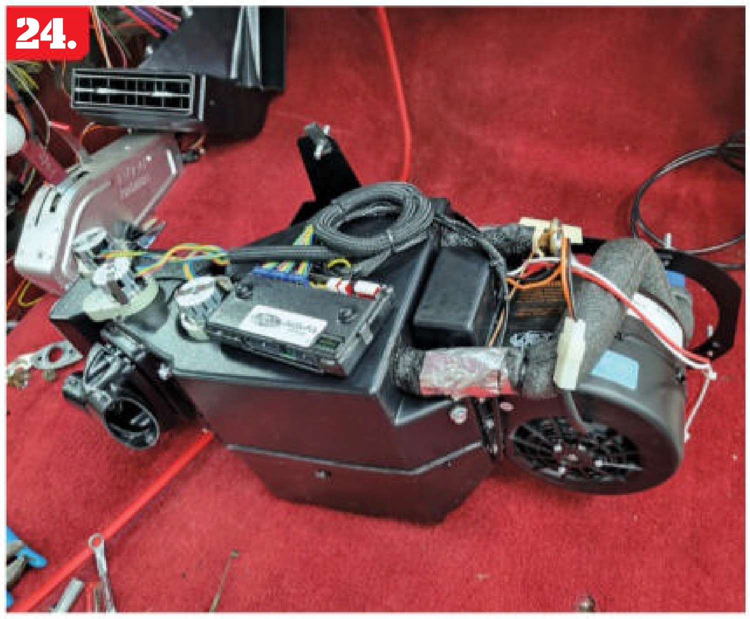
21. Keeping things simple is often the key to success. The mild-mannered, carbureted small-block may not be a tire shredder but it's a great cruiser, not fussy, and absolutely reliable.

22. Inside the wagon, a number of improvements were made. Dakota Digital supplied the Retro-tech RTX Analog/Digital Instrument System.

23. Dakota Digital provided the vintage-appearing but high-tech clock to go along with the instrument cluster.

24. The Gen IV Vintage Air climate-control system uses a fully electronic microprocessor control system that eliminates cables or vacuum connections.

24.



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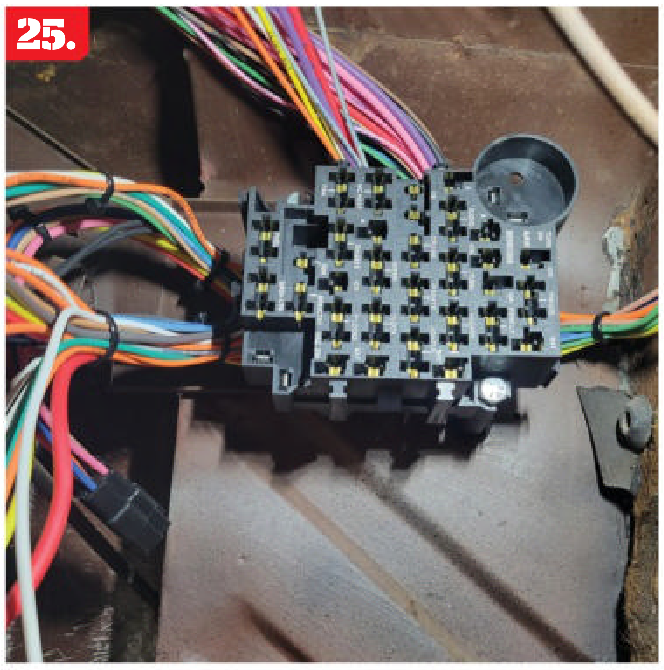

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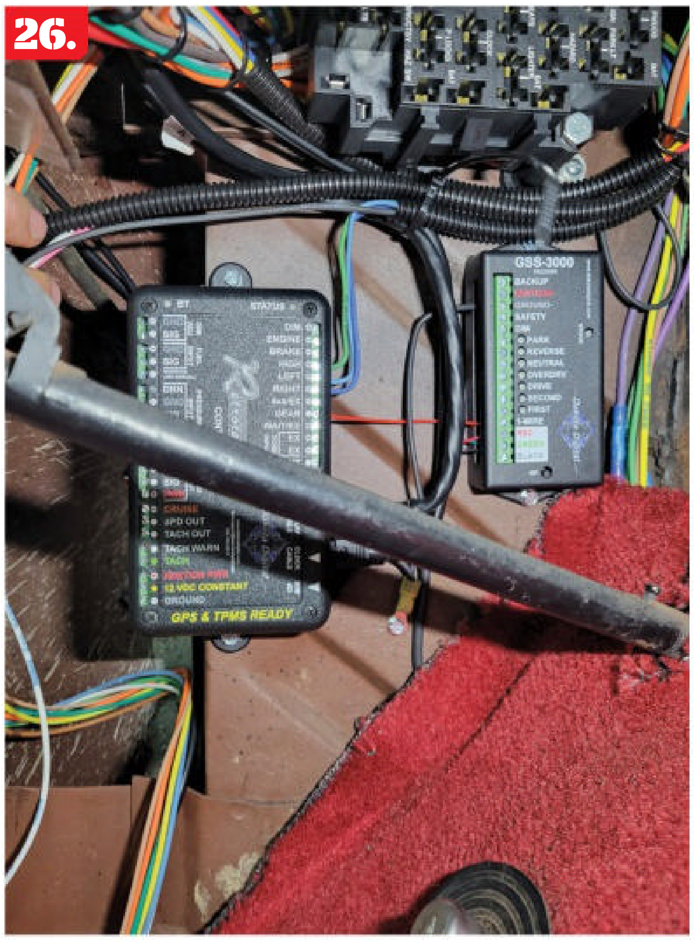
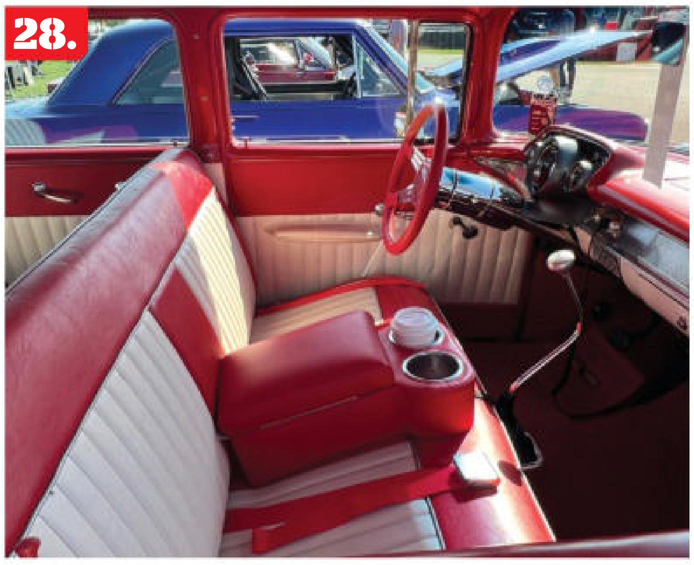


25. Srbinovich completely rewired the wagon from front to back with an American Autowire kit. The fuse block was mounted to the cowl on the left side.

26. Below the fuse block are the Dakota Digital RTX instrumentation control box and the GSS-3000 gear shift position decoder.

27.

28.



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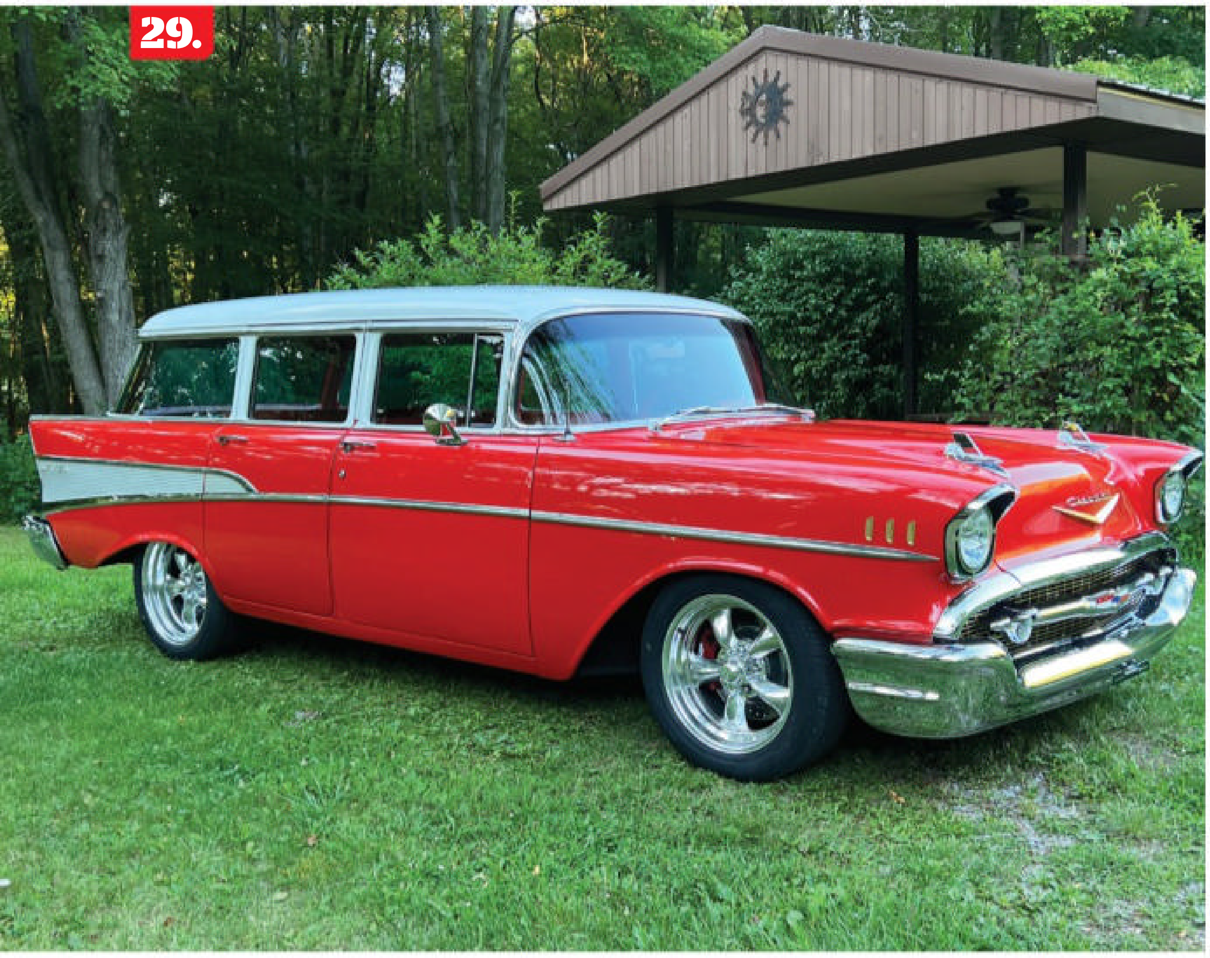

27. Dixey's Rod Tours are on rain or shine, so the original cable-driven windshield wipers were updated with a Rain Gear hidden wiper system that mounts the motor on the inside of the firewall.

28. While the upholstery was untouched, a new CPP tilt steering column was installed along with a Lokar shifter.

29. Dixey's cool cruiser wagon rolls on American five-spoke wheels from Speedway Motors. Due to the 13-inch front rotors, a minimum of 17-inch wheels must be used. Front wheels are 17x7, rears are 18x8; tires are 215/55R17 and 245/45R18, respectively.

In addition to the gauge cluster, Dakota Digital supplied a VLC series clock. It has a cool analog face with LED backlighting and lighted needles. Installation is easy as it simply plugs into the instrument's controller.

To keep Dixey comfortable in all kinds of weather, the Chevy's original heater was swapped for a Vintage Air heat and cooling unit. The complete kits included the evaporator plus all underhood components, such as the compressor and brackets, condenser with brackets, preformed refrigerant lines, drier and fittings, hardware, and installation instructions. The electronic servo motor controls the Fly-by-Wire Vintage Air system and is regulated by a stock-appearing heater control panel.

An oddity of Tri-Five Chevys is the cable system used to drive the windshield wipers. Over time the cables stretch and the operation of the wipers becomes erratic or fails completely. To prevent potential problems, the original wiper system was replaced with a complete Rain Gear lever and link system.

Once Dana pronounced the Chevy complete, Dixey took a few short trips around town then headed to the Woodward Dream Cruise in Detroit four hours away. Dixey reports the trip proved all the changes made to the '57 were just what was needed. It was comfortable, rode like a late-model car, and had that perfect lowered look. "I'm all set for the upcoming Road Tours, and I might even take it to the drive-in for old times' sake." ACP

SOURCES

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